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LEGISLATIVE ASSEMBLY.

NEW SOUTH WALES.

REPORT

OF THE

DIRECTOR-GENERAL OF PUBLIC HEALTH

NEW SOUTH WALES,

FOR THE YEAR 1928.

PRESENTED BY THE MINISTER FOR HEALTH (THE HON. RICHARD ARTHUR, M.D., M.L.A.)

Printed under No. 10 *Report from Printing Committee*, 5 *December*, 1929.

SYDNEY: ALFRED JAMES KENT, I.S.O., GOVERNMENT PRINTER.

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NEW SOUTH WALES.

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Members of the State Board of Health, 1928.

Robert Dick, M.B., Ch.M., D.P.H. (President).

Robert Thomson Paton, C.M.G., F.R.C.S., Edin., M.D., Brux. (Died 17th February, 1929).

Augustus Frederick Robinson ... ... Member, Board of Health.

Cecil Purser, M.B., Ch.M.... ... ... do do

G. A. Parkes, Esq. (Chairman, Chamber of Commerce) do do

J. Garlick, Esq. (Chief Civic Commissioner) ... ... do do

The Hon. J. L. Fegan ... ... do do

William George Armstrong, M.B., D.P.H. ... ... do do

The Hon. Frank Edgar Wall, M.D., M.L.C. ... ... do do

Mrs. Euphemia Jean Maincke ... ... do do

Administrative Staff.

Director-General of Public Health and Commissioner for Venereal Diseases: Robert Dick, M.B., Ch.M., D.P.H.

Senior Medical Officer of Health and Director of Maternal and Baby Welfare: E. Sydney Morris, M.D., Ch.M., D.P.H.

Assistant Medical Officer of Health: F. M. Suckling, M.B., D.P.H.

Secretary: T. H. Neely, Esq.

Divisions and Branches.

The following Divisions are controlled by the Director-General of Public Health :—Maternal and Baby Welfare; Tuberculosis; Venereal Diseases; Industrial Hygiene; Government Medical Officers for Sydney; Medical Officers of Health, Metropolitan, Newcastle and Broken Hill Districts; Microbiological Laboratories, Sydney and Broken Hill; Chemical Laboratory; Pure Food; Dairies Supervision and Cattle Slaughtering; Sanitation; Publicity, &c.

The Hospital Division comprises the Coast and David Berry Hospitals, Leper Lazaret, five State Hospitals and Homes, Waterfall Sanatorium, Montrose and Fernleigh Maternity Hospitals, Greycliffe Babies Hospital, and two Convalescent Hospitals.

Legislative Enactments.

The Minister of Public Health is charged with the administration of the following Acts, execution of which is left to the Director-General of Public Health and the staff working under his control :—Cattle Slaughtering and Diseased Animals and Meat (Amendment) Act, 1901; Diseased Animals and Meat (Amendment) Act, 1910; Food Preservation by Sulphur Dioxide Enabling Act, 1920; Noxious Trades Act, 1902; Private Hospitals Act, 1908; Public Health Act, 1902; Public Health (Amendment) Act, 1915; Public Health (Amendment) Act, 1921; Public Health (Night-soil Removal) Act, 1902; and Closed Cemeteries and Exhumation of Bodies for the purpose of re-interment, &c.

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REPORT of the Director-General of Public Health to the Honorable the Minister of Public Health.

Sir,

I have the honour to present herewith my report for the year 1928. The activities of this office continue to expand to meet the demands made upon it in the wide fields of public health. The reports of the various divisions, into which the work of the office is sectionalised, briefly describe the various matters which have been dealt with during 1928.

In order that adequate attention might be given to the important subject of venereal disease, a director of this division was appointed during the year.

The additions to the staff in recent years have intensified the already overcrowded state of the office accommodation and it has been necessary to rent quarters elsewhere for several sections at a cost of £404 per annum.

The co-operation of medical officers of other State departments and of the Federal health service have been availed of in dealing with various questions. An advance has been made in bringing about a degree of centralisation of the medical officers engaged in various departmental and other activities. Such an arrangement has many advantages.

During recent years steady progress has been made by local authorities in matters concerning public health. It is true that, as a result of sanitary surveys of different districts by departmental officers, unsatisfactory conditions are found, and in some cases pressure has to be brought to bear by the department to compel necessary improvements. That some real progress has come about in this State is evidenced by the steady decline in the incidence of typhoid fever, which is universally regarded as closely associated with general insanitary conditions. The incidence of typhoid fever over the whole State during the past two years has been the lowest since notification came into force some thirty years ago.

A good deal has been accomplished in the direction of improving the environment of the individual, more particularly in the cities and larger towns. There is, however, room for improvement in various directions. Whilst the institution of safe water supplies is gradually proceeding, little progress is being made in providing sewerage systems. It is to be regretted that many towns of several thousand inhabitants are still without the benefits to be derived from water carriage systems of sewerage, and have to rely on conservancy methods for dealing with excreta. If some scheme could be devised whereby local authorities might obtain funds at cheap rates for the institution of sewerage systems there would no doubt be very much more rapid progress made than is now possible. There is all the more need nowadays for the sanitary condition of country towns to be brought to a high level in view of the great traffic resulting from motor transport.

As against environmental conditions there are other important matters which directly concern the health of the individual. Some of these fall within the scope of work of existing divisions of the department, *e.g.*, maternal and baby welfare, venereal disease, &c. There are, however, many other important problems which are not receiving the attention they deserve, *e.g.*, dietetics, mental hygiene, the pre-school child, &c.

The need for consolidation and amendment of the various statutes dealing with health matters has been brought under notice on many occasions, and is again mentioned in view of its importance. It is hoped that this matter will receive attention in the near future.

VITAL STATISTICS.

The leading items of the vital statistics for the year have been extracted from the Government Statistician's Report (p. 8). At the end of 1928 the population of the State was 2,446,874; the birth rate for 1928 was 22·59 and the death rate 9·55 per 1,000 of the population. The birth rate was 4·5 per cent. and the death rate 1 per cent. below the average of the previous five years. Of the total deaths, 3,004 were of infants under one year of age, equal to a rate of 54·82 per 1,000 births. The reduction in the infantile mortality rate has not shown itself in the first months of life. Intensive work is needed to help solve the difficult problems which lead to the heavy toll amongst the newly born.

Apart from measles and scarlet fever, the infectious group of diseases occasioned 7 per cent. fewer fatalities compared with the previous five years. Measles, scarlet fever, diphtheria and whooping cough continue to be constantly present in the community. Although it is considered that by the widespread use of protective inoculation the incidence of these diseases could be reduced to very small proportions, a great deal of attention will need to be given to the education of the public as to the value of this procedure before one can expect its more general use.

Deaths from pulmonary tuberculosis continue to diminish, whilst the deaths from cancer and heart disease are increasing year by year. (See graph, page 10.) In connection with the cancer problem considerable assistance, monetary and other, has been provided by the Federal and State Governments to forward cancer research and treatment. The investigation of certain problems connected with cancer is being carried out by several research workers under direction of the Cancer Research Committee, and the facilities for treatment by radium and deep therapy are being considerably extended to meet the pressing needs of the sufferers.

METROPOLITAN AND HUNTER RIVER DISTRICTS.

The vital statistics for the Metropolitan and Hunter River Districts are commented on by the medical officers of health in their reports (pp. 74–84).

MATERNAL AND BABY WELFARE (p. 29).

In connection with the important subject of maternal mortality the director of this division (Dr. E. Sydney Morris) points out that it is somewhat difficult to draw accurate conclusions from the mortality rates recording this condition in different parts of the world, as there is no certainty that the data on which they are founded are quite uniform. In New South Wales there is in operation a very complete system of recording deaths which may be due to puerperal conditions. It is the practice of the Government Statistician to record as puerperal deaths all fatalities arising out of child-bearing which may be related directly or indirectly with child birth unless proved otherwise. It is questionable whether such an exact record system is in operation in all other parts of the world.

The deaths associated with child birth in New South Wales are no doubt more numerous than they should be. The subject of maternal mortality is one which is engaging active attention in most civilised communities. It is recognised that there are many and various causes in operation resulting in this excessive toll amongst mothers. These causes are ascribed either to the condition of the patient and her environment or to those persons in attendance (doctors and/or midwives) at the confinement. It is generally agreed that if any substantial reduction of this enormous loss of valuable lives is to be brought about more attention must be devoted to the better training in obstetrics of medical students (who are to become the general practitioners of the future), and to the more extended course of training of midwifery nurses, and also to the careful supervision of the expectant mother throughout pregnancy. In connection with the subject of antenatal supervision, returns from the Baby Health Centres show that about 4,000 expectant mothers attended thereat. It is proposed to provide antenatal clinics in suitable centres. Maternal and baby welfare embrace very wide fields, and it is recognised full well that if good results are to be achieved it is essential that the hearty co-operation of the medical and nursing professions must be secured. Social welfare organisations and private individuals also can render considerable assistance.

There are many important problems in these fields which need investigation. To assist in this work an assistant medical officer (female) and seven doubly certificated nurses have been added to the staff of this division. Close co-operation exists between the Division of Maternal and Baby Welfare, the Nurses Registration Board and that branch of the Department which deals with private hospitals. The condition known as " puerperal pyrexia " has recently been made notifiable by midwives in attendance on lying-in cases. Every case of puerperal pyrexia coming to the knowledge of the division is personally investigated by one of the staff. It is proposed to have the condition known as " puerperal infection " made notifiable by medical practitioners under the Public Health Act.

The Baby Welfare activities of this division have considerably increased. Nine new Baby Health Centres were opened during the year—two in the metropolitan area and seven in country towns. Had financial arrangements permitted there might have been opened a number of other centres in the country. The Country Women's Association undertook all responsibility as regards the supply of suitable quarters and equipment for about twenty additional clinics in as many different country towns, but unfortunately the department could not make available nurses for any of these proposed new centres. The willing help given by the Country Women's Association in this work is highly appreciated by the Department.

The number of individual babies brought to the Health Centres during the year totalled 30,310; the total attendances numbered 309,117, being 54,000 above the figures for 1927. There are still something like 30 per cent. of new born babies who are never brought to a Health Centre, and it is noticeable that it is amongst this group that the greater part of the preventable infantile mortality occurs. As far as possible every endeavour is made to encourage the mothers of this group to bring their babies to the Centres.

The visiting of mothers in their homes is one of the primary duties of the nurses at the Centres. During the year 24,804 new born babies were visited at their homes by the nurses within a week or two of birth. There can be no doubt that the activities of the Baby Health Centres have contributed largely to the lowering of the infantile mortality rate. There is, however, a considerable loss of life amongst infants under one month of age due in many cases to conditions which largely concern the mothers. There is need for intensive inquiry into the problems associated with this heavy neonatal mortality which is experienced, not only in this State, but even in those parts of the world which have much lower infantile mortality rates than that (54·82) obtaining in New South Wales. It is the intention of the division to carry out investigations into these problems in order to, if possible, bring about a diminution in the heavy toll on these young lives.

INFECTIOUS DISEASES (p. 35).

The total notifications of infectious disease for the year amounted to 9,898 cases, of which 366 proved fatal, compared with a total of 12,941 cases and 401 deaths in 1927. The principal decreases were scarlet fever, 5,531 cases, compared with 8,369 in 1927; and diphtheria, 3,835 cases, compared with 4,259 in 1927. As regards typhoid fever, the return for 1928 was the lowest recorded for this disease since the inception of notification, viz., 453 cases, of which 60 proved fatal. The continuous decrease in the incidence of typhoid fever may be taken as indicative of sanitary progress. In the metropolitan area the death rate from typhoid is at the present time one-fiftieth of what it was forty years ago, having fallen from 51·3 per 100,000 for the years 1888–1890 to 1 per 100,000 of the population for the years 1927–1928. It is difficult to say whether the extensive use of preventive inoculation amongst those recruited for the war has had any effect in bringing about the low incidence of typhoid fever in this State. Preventive inoculation against typhoid is practised when occasion warrants it, and there is usually no difficulty in inducing home contacts of typhoid cases to submit to this useful preventive treatment.

Scarlet fever and diphtheria are constantly present in the State and give rise to widespread epidemics at short intervals. Though the mortality from these diseases has fallen considerably during recent years it is, nevertheless, true that they occasion a large amount of preventable illness. In the campaign against scarlet fever and diphtheria antitoxic serum is generally used in the treatment of diphtheria, and also as a preventative. In the case of scarlet fever similar methods are adopted, but on a much more restricted scale. The active immunisation of persons susceptible to those two diseases by means of toxins is coming more and more into use in various parts of the world. In this country a limited number of diphtheria susceptibles have been so immunised. At the present time, however, this procedure is not being carried on in this State, and very little has so far been done in Australia in preventive inoculation against scarlet fever.

VENEREAL DISEASES (p. 44).

Five thousand two hundred and twenty-six notifications were received in 1928, a decrease of 445 on the figures for 1927. There were 1,255 cases of syphilis (males 897, females 356); gonorrhoea cases, 3,715 (males 3,204, females 511); other forms of venereal disease, 256. In the last three years there has been a reduction in the sex ratio incidence of gonorrhoea, which may be due to a greater proportion of infected females seeking treatment.

The names and addresses of 1,113 patients failing to continue treatment (males, 833; females, 280) were received in 1928, but nearly 50 per cent. of these could not be traced. 441 persons resumed treatment, and follow-up proceedings in regard to 70 were in progress at the end of the year.

An examination of the figures for the eight years this Act has been in operation shows that the average of persons who discontinued treatment before cure has been 23·4 per cent., of whom about 50 per cent. could not be traced owing to false addresses having been supplied by them. I feel confident that many of the serious disabilities and unsatisfactory results which now obtain will disappear so soon as there is made available under departmental control an efficient continuous clinic for males in the metropolitan area.

Clinics.—A description of the clinic at the Rachel Forster Hospital for Women and Children is published on p. 44. This clinic, which is regarded as a model of its kind, has maintained its high standard of efficiency, the attendances during 1928 numbering 4,400.

A Director for the division was appointed late in 1928. Every effort will be made during 1929 to bring about the establishment of continuous clinics for males at Sydney and Newcastle. I regard the provision of these continuous clinics for male patients as the most urgent requirement in the campaign against venereal disease. Bed accommodation for male patients at the Coast Hospital has been increased from fifty to ninety-one beds.

The amount expended by the State in connection with venereal diseases has increased from £24,634 in 1926 to £31,275 in 1928, being at the rate of 2·51 pence per head of the population in 1926 compared with 3·06 pence per head in 1928.

Publicity work includes the showing of films as well as lectures and talks carried on in conjunction with the Racial Hygiene Centre and the Father and Son Welfare Movement. Posters giving advice on venereal disease with a list of the available clinics are kept displayed in public lavatories.

TUBERCULOSIS DIVISION (p. 49).

From the report of the Director it will be seen that there were 1,212 notifications in 1928; 1,060 of which were from the metropolitan district, 62 from the Hunter River district and 90 from the Blue Mountains area. At the end of 1928 pulmonary tuberculosis was notifiable only in these areas, but a proclamation is being issued to make the disease notifiable throughout the whole State.

Co-ordination of tuberculosis work under the Board of Control established in 1926 is actively in progress. The location of the 922 beds available for the treatment of tuberculous patients, and instructions for securing admission are detailed on pp. 49–50. The Board of Control has recommended that additional beds be provided for tuberculous patients, more particularly in connection with general hospitals.

Dispensaries.—A marked increase is shown in the work of the dispensaries compared with 1927, no doubt mainly due to the increased number of visiting nurses which have been made available. It is considered that five additional visiting nurses are required in the metropolitan area to ensure adequate attention being given to the known tuberculous families.

Publicity.—Every opportunity has been availed of to make the work of the Division widely known by broadcast talks, films, window displays and the showing of models of open-air wards, chalets, effective ventilation systems, &c.

Waterfall Sanatorium.—There are 441 beds at Waterfall, of which 305 are reserved for males and 136 for females. The average daily number of beds occupied in 1928 was 410, and a total of 931 cases came under treatment. Of the 427 cases discharged in 1928, 29 were classed as "arrested," 78 "much improved," 199 "improved," 121 "unimproved." The provision of 60 beds at the Coast Hospital Auxiliary for advanced male tuberculosis cases has made it possible to keep Waterfall Sanatorium free of this class of patient. This has been of considerable benefit, both to the patients and to their friends. It has also a decidedly good effect in allowing the Sanatorium to confine its activities to the more hopeful type of case. The provision of similar accommodation to the extent of about 30 beds is urgently required to meet the situation so far as advanced female cases are concerned.

THE DIVISION OF INDUSTRIAL HYGIENE (p. 53).

Textile Mills.—Investigation of the atmospheric conditions necessary to make work at high temperatures and humidities reasonably comfortable for acclimatised and suitably clothed male and female operatives in textile mills was determined. The air-movement required varies in Class I mills from 20 feet per minute at 80 deg. F. to 90 feet per minute at 90 deg. F., and in Class II mills from 45 feet per minute at 80 deg. F. to 420 feet per minute at 100 deg. F. It is advised that no person under the age of 16 years be employed in processes carried on at the higher temperature range.

Ventilation of Railway Tunnels under Construction.—At the request of the Industrial Commission supervision of the testing of the ventilation of the city railway tunnels and other excavations in sandstone has been continued. The ventilation of the city railway tunnels has been very satisfactory.

Health Hazards in the Lead Industry.—A large number of cases of suspected lead poisoning from accumulator manufacturing works, smelting works, printing trades, &c., were investigated. The regulations dealing with this hazard in accumulator works have been put into force, and in the better plants there has been a marked decrease in the number of cases.

Other inquiries included pyroxylin spray painting, chromium salts in printing works, sulphuretted hydrogen in cylinder sinking, and nitrous fume poisoning. An inquiry was also made into the cause and incidence of so-called "milk eczema," which was alleged to be common amongst persons milking cattle.

PURE FOOD ACT (pp. 12–18).

Over 1,200 samples of meat and sausages were collected, to 328 of which preservative powder was found to have been added. Successful prosecutions were undertaken in every instance.

In connection with the examination of 9,743 samples of milk and cream, 170 prosecutions were successfully undertaken. Of other foods and drugs, 355 samples out of 2,022 were adulterated. In all £3,096 were collected in fines and costs for breaches of the Pure Food Act.

During the year the Food Preservation by Sulphur Dioxide Enabling Act, 1920, was proclaimed and took effect in May, 1928. Special regulations were passed to control the sale of whole meats, poultry and other food coming within the scope of this Act. The results of analysis of various meats tested by a process coming under this statute are given in the chemical laboratory report (p. 15). This Act legalises the use of sulphur dioxide as a preservative for whole meats, whereas the regulations under the Pure Food Act prohibit the use of this preservative in meat and meat products except in the case of sausages, mince meat and cooked pressed meat, to which not more than 3½ grains per pound may be added. The use of dusting powders containing sulphites on fresh meat is still carried on by some retail butchers nominally for the purpose of giving the meat a florid appearance, but these sulphites also act as preservatives. The legalisation of the use of sulphur dioxide for preservative purposes in the one case and its prohibition in the other will probably lead to protests by interested parties.

A considerable amount of attention was given during the year by the Pure Food Advisory Committee to the draft regulations put forward by the Conference of Federal and State representatives on Foods and Drugs, which aim at bringing about uniformity in this field, at least as far as articles entering into interstate trade are concerned. The consideration of this draft was not finalised by the end of the year.

DAIRIES SUPERVISION ACT (p. 20).

The Chief Inspector reports that dairy premises visited numbered 17,400, and 512,461 dairy cattle were inspected, of which 973 were condemned, the diseases found being tuberculosis, 673 (·13 per cent.); actinomycosis, 155 (·03 per cent.); cancer, 121 (·02 per cent.); other diseases, 24 (·004 per cent.).

The question of the general application of the tuberculin test to all dairy cattle has been brought before this department on several occasions. A limited number of dairy herds have been subjected to this test at regular intervals and are kept free from tuberculous animals. This testing has been carried out at the request of the owners of the herds by officers of the Department of Agriculture. To carry out a universal tuberculin testing of all dairy herds in the State and to provide for compensation for the destruction of reacting animals would require an annual expenditure of many thousands of pounds.

The dairy herds maintained by this department at the Coast Hospital and at the Liverpool, Newington and Lidcombe State Hospitals and Homes are regularly subjected to the tuberculin test by officers of the dairy inspection branch and are kept quite free from tuberculosis.

SYDNEY MILK SUPPLY (p. 126).

One hundred and forty-two samples of milk were examined bacteriologically from 97 dairies. In the 17 instances where an unduly high bacterial count was obtained the procedure followed was similar to that described in the Report for 1927.

No tubercle bacilli were found in any of the 142 samples, either by the microscopical examination of centrifuged sediment or by guinea-pig inoculation. A lesion which later developed in one of the inoculated guinea-pigs is being further investigated as to the possibility of its being due to the micro-organisms which causes contagious abortion in cattle.

A Bill dealing with the milk supply has been under consideration during the past few years, but no new legislation has been enacted in this connection since the Dairies Supervision Act of 1900 and the Pure Food Act of 1908. Amendment of these two Acts has been pressed for by this department on numerous occasions.

There have been no developments in regard to the general use of bottled milk in the metropolitan area. The present bottled supply is very limited in extent and cannot be regarded as satisfactory.

It is generally agreed by competent authorities that the safest milk, particularly for larger centres of population, is an efficient pasteurised bottled supply. During recent years this State has been remarkably free from serious epidemics conveyed by milk, but there is no guarantee that this immunity will continue. In order to minimise the risks attaching to present methods, efficiently pasteurised bottled milk should be made available, at least for the larger centres of population.

ABATTOIRS AND MEAT INSPECTION.

Although several of the larger country towns, *e.g.*, Goulburn, Orange, Casino, &c., have at various times taken up the question of establishing abattoirs under the Local Government Act, nothing definite has yet eventuated. During the year the local authorities in the Maitland–Cessnock district devoted considerable attention to the question. There appears to be some prospect of a satisfactory arrangement being made in the near future in these areas. At present no abattoirs are provided in any district except in the metropolitan area of Sydney, the Newcastle district, and at Broken Hill.

In order to provide funds to allow of employment of competent meat inspectors in certain districts it has been suggested that the inspection fees for cattle slaughtered within the district of a local authority might be increased. An amendment of the law would, however, be necessary to allow of this.

SANITATION (p. 21).

In addition to the usual work connected with sanitary surveys of municipal and shire districts, special investigations were made in regard to Theatres and Public Halls, Camps and Camping Sites, and Swimming Pools. The greatly increased use of the motor car has led to the formation of numerous camps at the seaside and elsewhere. From the unsatisfactory conditions found at some of these camps it appears advisable that some appropriate ordinance should be framed to control them. As regards swimming pools, it is gratifying to find that these facilities are being more generally provided by local authorities in inland towns. It is very necessary there should be some standards to which these establishments should conform, particularly as regards the purity of the water used in the pools.

An officer of this branch was in charge of the Health Exhibit on the "Better Farming Train." Between March, 1927, and November, 1928, this train covered 8,290 miles and stopped for one or two days at 152 country centres; the exhibits were inspected by over 350,000 persons, many of whom travelled 60 miles or more for the purpose of visiting the train. It was thus possible to give demonstrations and instructions in health subjects to a wide circle of persons with whom the Department could not otherwise have got into contact.

Hookworm Campaign.—An officer of this branch accompanied a medical officer of the Education Department in an intensive survey of those sections of the North Coast district where hookworm is endemic. This survey was a continuation of previous work of similar character carried out in these areas during preceding years. In the area inspected the residents comprised 11,900 Europeans and 706 aborigines. The percentage of specimens examined from the former showed 2·3 per cent. infested with hookworm and from the aborigines 30·3 per cent. The preponderance of infection among the aborigines demonstrates the need for systematic treatment and for the control of their migration from place to place to avoid risk of carrying infection into clean areas. The difficulties associated with the aborigines especially concern those of them who do not reside on reserves, but who live in scattered groups and wander from place to place.

The Federal Health Department collaborated in the campaign and rendered great assistance in many ways. The examination of specimens for hookworm was undertaken by officers of the Commonwealth in its public health laboratory at Lismore.

Land Unfit for Building Purposes.—Extensive areas of low lying swampy land bordering on and adjacent to the various bays and salt water creeks in different parts of the metropolitan district, the Hunter River district and, to a much lesser extent, in other more sparsely settled areas of the State, have been proclaimed from time to time by the Department as unfit for building purposes. Land of this character was formerly of very little market value. Owing, however, to the great increase in land values generally, and the increased population in the metropolitan district in recent years, a demand has arisen for the use of these inferior lands for building purposes. In order to properly control the carrying out of the various improvements required by the Department so that these areas might be rendered fit for building purposes, a licensed surveyor was added to the Sanitary Inspector's staff during the year. The reclamation and improvement of these low-lying areas has made available a considerable amount of conveniently located healthy building land, and at the same time has led to the abolition of numerous mosquito breeding places.

MEDICAL OFFICERS OF HEALTH (Section II, p. 80).

The vital statistics and health conditions of the Metropolitan Combined Sanitary District of Sydney and the Hunter River Combined Sanitary (Newcastle) District are fully discussed by the Medical Officers of Health on pp. 74-84.

The Medical Officer of Health at Newcastle again directs attention to the urgent need that exists for erection of an infectious diseases hospital to meet the requirements of the district, and also to the need of adequate provision for the treatment of venereal diseases. The Federal Government has agreed to contribute to both the cost of erection and maintenance of a clinic for venereal disease in view of the service it will render to the shipping population in that centre.

Broken Hill (p. 84).—The arrangements outlined in my report for 1927 to provide for medical and health work at Broken Hill were finalised by the appointment of Dr. W. E. George in charge of the district early in 1928. The combination of medical duties as has been made possible in this centre is in the interests of both economy and efficiency.

HOSPITAL ACCOMMODATION.

The question of providing increased bed accommodation for both general and infectious cases in the metropolitan area is one which calls for attention. There is very great pressure on the beds now available for general cases and considerable delay often occurs before even acute cases can gain admission, and there are always long lists of patients awaiting admission to the larger metropolitan hospitals. The Department is frequently appealed to for beds for urgent cases which fail to gain admission to the larger hospitals. In this connection the Coast Hospital is usually able to render assistance in relieving the situation. It is clear, however, that additional hospital beds are needed in the metropolitan area. The opening of additional wards at the Coast Auxiliary Hospital, Randwick, would be one of the simplest and most economical ways of meeting the situation. At the present time 90 beds are available for use at this auxiliary. There are in addition a number of other wards which can be reconditioned at small cost, and which would make available at this auxiliary hospital something like 300 additional beds.

As regards bed accommodation for infectious cases, there are at the present time about 320 beds provided in the metropolitan area for all forms of infectious disease, and of these beds 254 are at the Coast Hospital. The total beds provided are in the ratio of 1 bed for 3,000 of the present population. The generally accepted ratio of beds for infectious cases is 1 bed to 1,000 of the population.

As the population of the metropolitan area is rapidly on the increase it is clear that additional bed accommodation for infectious cases will need to be provided. It is considered that as a first step this increased accommodation might best be provided as additional hospital units in the western and northern suburbs. Already sketch plans have been prepared for a unit of 60 beds to serve the western suburban area.

Private Hospitals Act, 1908.

The operation of this Act is reported on by Dr. F. M. Suckling (p. 25). This Act, which has served a very useful purpose in many ways, could with advantage be improved in various directions. In most countries a great deal more attention is now being given to the necessity for stricter measures to control private hospitals, particularly those which deal with maternity cases. It is possible that with the development of pay sections in connection with the public hospitals the part at present played by private hospitals in the community will figure less largely.

During recent years certain premises to which the name of Rest Home is applied have become more numerous in the metropolitan area. These homes provide accommodation for enfeebled old folk and for the chronic infirmary type of case. It is questionable if these homes come within the scope of the Private Hospitals Act. Nevertheless, it is very desirable that some supervision should be exercised over them by this department.

State Hospitals and Homes (pp. 86–118).

Section III of the report contains the reports of the Medical Superintendents and Officer-in-Charge of the 14 State Hospitals and Homes.

The Coast Hospital with 760 beds (general, 549; infectious, 211) and 90 beds at the Auxiliary Branch at Randwick is now probably the largest general and infectious hospital in the southern hemisphere.

In the Leper Lazaret there remained 20 patients (16 males and 4 females) at the end of 1928.

10,745 in-patients were treated at the Coast Hospital in 1928, of whom 6,948 were discharged cured, 2,175 relieved, 219 unrelieved, and 654 died. The average daily number of patients resident was 737·4; and the average cost per bed per annum, £154. The total cost for the year was £113,562. Though plans were prepared several years ago for quarters to properly house the nursing staff at this hospital, no steps have yet been taken to provide this much needed accommodation.

The smaller hospitals under my charge include the David Berry Hospital, Berry (general and infectious cases), 26 beds; Montrose and Fernleigh Maternity Hospital and Rest Home (8 maternity beds); Lady Edeline Hospital for Babies (47 cots), and the convalescent hospitals at Rose Bay (women, 32 beds) and Eastwood (men, 29 beds).

At the State Hospitals and Homes at Lidcombe (1,600 men), Liverpool (713 men), Newington (728 women), Parramatta, George-street (346 men) and Macquarie-street (228 men), there was an average daily number of 3,405 persons resident during 1928. The total estimated cost was £174,226, or an average annual cost of £51 per inmate

The number of aged and infirm men seeking admission to the institutions at Lidcombe and Liverpool during recent years has been steadily increasing, and as it has been impossible to provide increased accommodation, very serious overcrowding of certain sections of these institutions has resulted.

At Lidcombe during the early part of the year the state of affairs became so serious that immediate action was necessary to relieve the situation. Several rooms used for administrative and other purposes were turned over to ward use and sixty beds were also made available at the Coast Hospital Auxiliary, Randwick. It is plainly evident that further accommodation must be provided at these two institutions if the needs of the aged and infirm men seeking admission to them are to be properly met.

Section IV, Microbiological Laboratory (pp. 119–126).

The Report of the Director (p. 120), shows that in 1928 there were 42,677 examinations, being an increase of 15 per cent. on the figures (36,558) for 1927. The increase was general, the most notable instances being sputa examinations for tuberculosis (3,851 in 1928, compared with 3,100 in 1927); venereal diseases, 9,111 specimens in 1928, compared with 7,306 in 1927; tests for hydatids from 20 in 1927 to 61 in 1928; typhoid 712 to 914.

The returns for 1928 complete a 20 years' survey of the fleas infesting rats as judged from those collected from rats brought in daily for examination. Rats procured from the waterfront in Sydney and Newcastle continue to be examined regularly for the presence of plague. At intervals examinations have been made in the laboratory to ascertain if the rats in this part of the world are affected with the spirochæte which produces a form of infective jaundice in human beings. So far no infection has been found, but the examinations are being continued.

A short report is contained in this section on diphtheria prevention at the Royal Alexandria Hospital for Children.

An endeavour was made to collect information as to after effects in persons who suffered from so-called X-disease during the epidemics of 1917-18. The medical men circularised knew of no undoubted case which exhibited after effects, but owing to the confusion that exists between X-disease, encephalitis lethargica and infantile paralysis it is difficult to obtain any authentic information.

Federal Health Council.

The second meeting of the representatives of the different States on this Council was held in Melbourne during March, 1928. A number of important public health subjects were very fully discussed and resolutions based thereon were forwarded through the official channels for consideration by the various governments. Amongst the more important matters dealt with were metropolitan milk supplies, tuberculosis, mental deficiency, notifiable infectious diseases, and sewerage systems for country towns.

During the meeting a joint conference was held between the Federal Health Council and the Statisticians of the Commonwealth and States. The object of this conference was to endeavour to bring about uniformity in the compilation of vital statistics throughout the different States of the Commonwealth.

Health Propaganda.

This has received a good deal of attention during the year. The subjects of maternal and baby welfare, prevention of tuberculosis, diet, and venereal disease were prominently featured. The "Better Farming Train," on which the department was afforded accommodation for a display dealing with rural sanitation, &c., served a very useful purpose in allowing contact to be made with a large number of dwellers in country places.

The Health Exhibition, Health Week, wireless talks, lectures, and the display of films dealing with various community and personal health subjects were methods of publicity made use of during the year.

ROBERT DICK,
Director-General of Public Health.

T. H. Neely, Secretary.

Extract from the Report of the Government Statistician, Mr. T. Waites, on the Vital Statistics of New South Wales for the year 1928 :—

Population.—The population at the end of 1928 was 2,446,874, of whom 1,247,091 were males and 1,199,783 females, the proportion being 104 males to 100 females. During the year the population increased by 44,990, or 1·87 per cent., of which 32,106 was due to the excess of births over deaths, and 12,884 to the excess of arrivals over departures. The mean population was 2,426,300.

Marriages.—The number of marriages was 20,076, corresponding to a rate of 8·27 per 1,000 of the population. The rate is ·96 per cent. above the average of the previous five years. In the Metropolis the rate was 9·87, and in the remainder of the State 6·92 per 1,000 of population.

The proportion of males married who were under 21 years of age was 7·57 per cent., and of females 27·03 per cent. The proportion in both cases is above the average for the previous five years.

Of the marriages, 18,831 were celebrated by the clergy and 1,245 by registrars. The largest number, 8,519, was celebrated according to the rites of the Church of England; then followed the Roman Catholic Church with 4,057, the Presbyterian with 2,748, the Methodist with 2,300, and all others 1,207.

Births.—The total number of births was 54,800, equivalent to 22·59 per 1,000 of population, which is 4·5 per cent. below the average of the previous five years. Of this number 28,274 were males and 26,526 females, the proportion being 107 males to 100 females.

Dividing the State into the Metropolis and remainder of the State, there were 21,151 births in the former, and 33,649 in the latter, corresponding to rates of 18·96 and 25·67 respectively.

The number of ex-nuptial births was 2,707, equal to 4·9 per cent. of total births, which is 1·24 per cent. below the quinquennial average. In the Metropolis the proportion was 5·8, and in the remainder of the State 4·4 per cent. of births. Proportionately to population, ex-nuptial births represented 1·12 per 1,000, which is 5·7 per cent. below the average of the last five years.

Deaths.—The deaths during the year numbered 22,694, equivalent to a rate of 9·35 per 1,000 of the population. This rate is 1·0 per cent. below the average of the previous five years.

The total includes 12,785 males and 9,909 females, equivalent to rates of 10·33 and 8·33 respectively per 1,000 of population. The rate in the Metropolis was 9·33 per 1,000 and in the remainder of the State 9·37.

Of the 22,694 people who died during the year, 4,102 were under 5 years of age, 10,161 were aged from 5 to 64, and 8,418 were 65 and over. The ages of the remaining thirteen adults were not specified. The rates per 1,000 living in the main groups, under and over 5 years, were 15·86 and 8·58 respectively as compared with 16·18 and 8·59, the average of the previous five years.

Infantile Mortality.—The number of children under 1 year of age who died was 3,004, equal to 54·82 per 1,000 births. To this total the Metropolis contributed 1,042, or 49·26 per 1,000 births, and the remainder of the State 1,962, or 58·31 per 1,000 births. The rate for 1928 is 4·8 per cent. below the average of the previous five years. Of the deaths under 1 year of age, 1,271, or 42 per cent., occurred under 1 week, 1,603, or 53 per cent., under 1 month, and 1,927, or 64 per cent., under 3 months.

Causes of Death.—Of the deaths during the year, the most important causes were as shown in the following statement, which, for purposes of comparison, also gives the average number of deaths during the preceding five years, due allowance having been made for increase in population :—

Causes of Death.	Number, 1928.	Average Number, 1923–27.	Increase (+) or Decrease (–) in 1928.
			per cent.
Typhoid Fever	60	91	– 34
Measles	162	67	+ 142
Scarlet Fever	105	50	+ 110
Whooping-cough	103	178	– 42
Diphtheria and Croup	172	180	– 4
Influenza	247	311	– 21
Plague	...	...	...
Erysipelas	33	37	– 11
Infantile Paralysis	2	8	– 75
Lethargic Encephalitis ...	23	31	– 26
Epidemic Cerebro-spinal Meningitis	8	25	– 68
Other Epidemic Diseases ...	47	61	– 23
Tuberculosis, Respiratory System	1,166	1,172	– 1
Tuberculosis Meninges and Nervous System	52	54	– 4
Other Tuberculous Diseases ...	99	78	+ 27
Cancer	2,280	2,227	+ 2
Diabetes	285	301	– 5
Leucæmia, Anæmia, Chlorosis ..	146	233	– 37
Other General Diseases... ...	546	531	+ 3
Meningitis	169	168	+ 1
Cerebral Hæmorrhage and Apoplexy†	804	916	– 12
Insanity	74	132	– 44
Convulsions of Infants	47	64	– 27
Other Diseases of the Nervous System†	642	681	– 6
Diseases of the Heart	3,849	3,325	+ 16
Diseases of the Arteries, Atheroma, etc.†	781	547	+ 43
Other Diseases of the Circulatory System	75	94	– 20
Bronchitis	395	461	– 14
Pneumonia	1,715	1,766	– 3
Other Diseases of the Respiratory System	294	303	– 3
Diseases of the Stomach ...	155	198	– 22
Diarrhœa and Enteritis (under 2 years)	775	794	– 2
Diarrhœa and Enteritis (2 years and over)	196	218	– 10
Appendicitis	190	196	– 3
Hernia, Intestinal Obstruction	209	217	– 4
Cirrhosis of the Liver... ...	113	109	+ 4
Other Diseases of the Digestive System	371	307	+ 21
Bright's Disease (Acute and Chronic)	1,245	1,161	+ 7
Other Genito-Urinary Diseases	362	389	– 7
Puerperal Septicæmia... ...	102	86	+ 19
Other Puerperal Diseases ...	225	239	– 6
Malformations	243	259	– 7
Congenital Debility	235	290	– 19
Premature Birth	865	927	– 7
Other Developmental Diseases	323	302	+ 7
Senility	784	1,164	– 33
Suicide	296	274	+ 8
Accident...	1,284*	1,238	+ 4
All other Causes	340	463	– 27
Total	22,694	22,923	– 1

* Includes 384 from motor accidents.

† See paragraph below, "Cerebral Hæmorrhage."

Epidemic Diseases.—The deaths from epidemic diseases numbered 962 as compared with an average of 1,039 during the previous five years, a decline of 7 per cent. The deaths from scarlet fever numbered 105, an experience which was 110 per cent. greater than the average of the previous five years.

Tuberculosis of the Respiratory System was the cause of 1,166 deaths in 1928, the rate, ·48 per 1,000 living, being 1 per cent. below the average of the five years 1923–27. Speaking generally, the death-rate from tuberculosis has been declining for some years past. The deaths of males numbered 681, and of females 485, and the rates per 1,000 living were ·55 and ·41 respectively. The mortality from other tuberculous diseases was 14 per cent. above the average.

Cancer.—The deaths from cancer numbered 2,280, equal to a rate of ·94 per 1,000 living, and 2 per cent. above the average of the preceding quinquennial period. The deaths of males numbered 1,196 and of females 1,084, the rates for each sex being ·97 and ·91 per 1,000 respectively. The death-rate from this disease has been increasing steadily for a number of years.

Cerebral Hæmorrhage.—To cerebral hæmorrhage and apoplexy during 1928 were ascribed 804 deaths, of which 391 were those of males and 413 of females. The rate was ·33 per 1,000 living, or ·32 for males and ·35 for females. The figures for 1928 are not comparable with those of the previous quinquennium. From the beginning of 1928, arterio sclerosis in combination with any cerebral vascular lesion has been classified as a disease of the arteries. This reclassification affects the figures for Cerebral Hæmorrhage, Other Diseases of the Nervous System, and Diseases of the Arteries, which under the old classification would have shown an increase of about 20 per cent., a slightly less decrease, and a decrease of 16 per cent. respectively, instead of the figures shown in the third column.

Diseases of the Heart were the cause of 3,849 deaths, the rate being 1·59 per 1,000. The apparent increase in these deaths during the last twenty-five years is probably the result of the greater attention given to pathological diagnoses. Furthermore, in combination with other diseases, where precise information is lacking, diseases of the heart are given precedence over many other diseases. The rate in 1928 was 16 per cent. above the average of the preceding five years. Of the total deaths, 2,135 were of males and 1,714 of females, the corresponding rates per 1,000 living of each sex being 1·73 and 1·44.

Bronchitis and Pneumonia.—Bronchitis with 395 deaths, equal to a rate of ·16 per 1,000 living, showed a decrease of 14 per cent., and pneumonia with 1,715 deaths, or ·71 per 1,000, a decrease of 3 per cent. as compared with the experience of the previous five years.

Of the deaths from bronchitis, 226 were of males and 169 of females, or ·18 and ·14 per 1,000 living respectively. Of the persons who died from pneumonia, 979 were males and 736 were females, and the rates were ·79 and ·62 per 1,000 living of each sex.

Bright's Disease.—During 1928 there were 1,607 deaths due to diseases of the genito-urinary system, of which 1,245 were caused by acute nephritis and Bright's disease. The rate for nephritis (acute and chronic) was ·51 per 1,000 living; for males ·58 per 1,000, and for females ·44 per 1,000. In 1928 the rate was 7 per cent. more than the average of the previous five years. The general tendency of the rate has been to increase.

Senility.—The deaths from this cause numbered 784, equivalent to a rate of ·32 per 1,000 living, or 33 per cent. less than the average during the years 1923–27. Many deaths formerly attributed to senility are now ascribed to some form of heart disease, with the result that deaths from senility, so described, have shown a considerable decrease.

Of the total deaths from senility, 396 were males and 388 females; the corresponding rates per 1,000 living were ·32 and ·33.

Diseases of Infants.—The principal causes were prematurity 865, other developmental diseases 781, diarrhœa and enteritis 600, pneumonia 287, whooping-cough 63, bronchitis 41, measles 36, and convulsions 31.

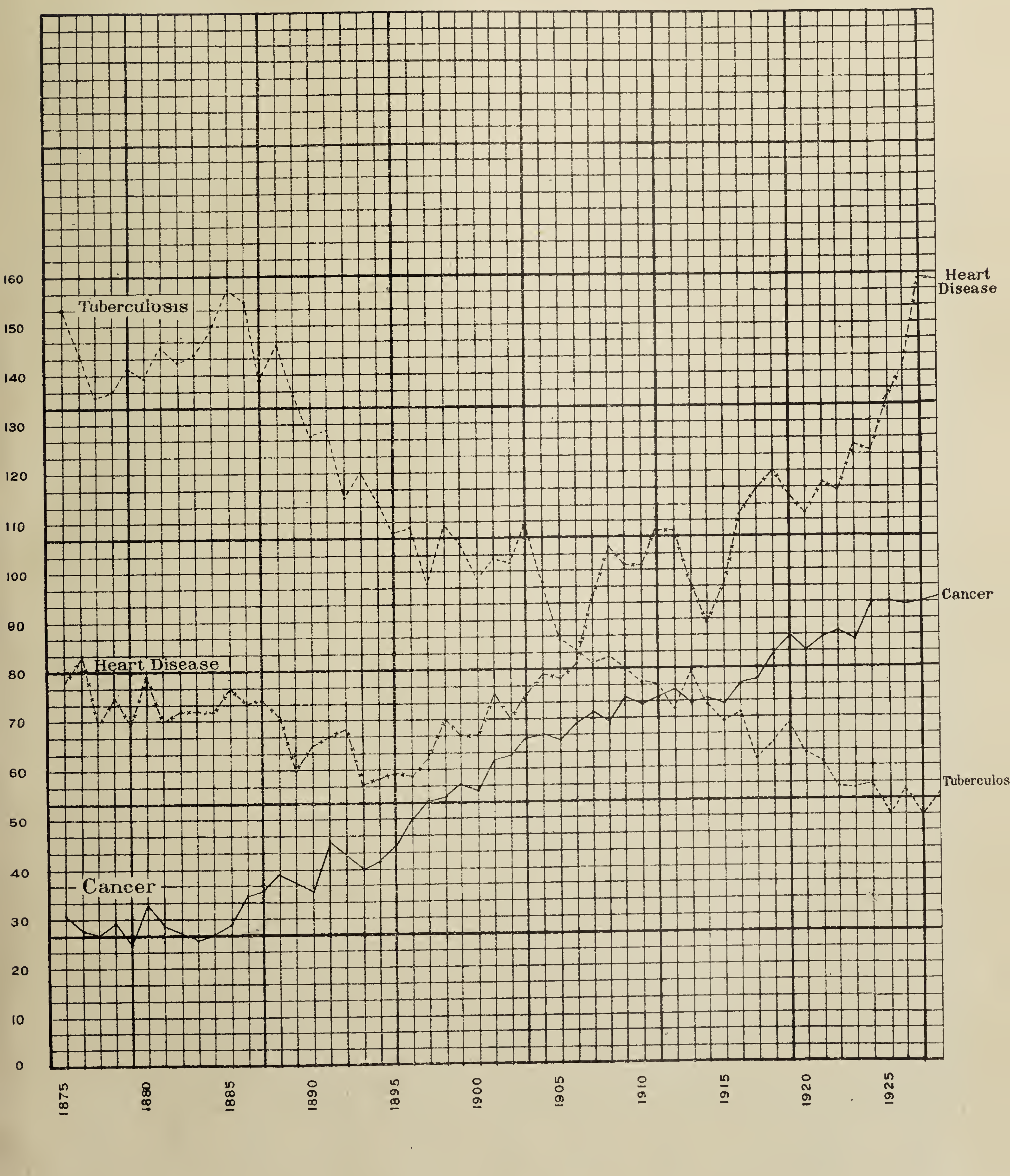
The following statement shows the causes of deaths of children under 1 year of age per 1,000 births, during 1928, in comparison with the preceding five years :—

Causes of Death.	Males.		Females.		Total.	
	1928.	1923–27.	1928.	1923–27.	1928.	1923–27.
Epidemic Diseases...	2·9	3·4	3·0	3·5	2·9	3·5
Tuberculous Diseases	·3	·3	·2	·3	·3	·2
Syphilis	·2	·2	·2	·3	·2	·3
Meningitis ...	·6	·8	·6	·6	·6	·7
Convulsions	·6	1·1	·5	·7	·6	·9
Bronchitis ..	·9	1·2	·6	1·0	·7	1·1
Pneumonia ...	5·7	6·3	4·8	5·4	5·2	5·9
Diarrhœa and Enteritis ...	11·5	11·8	10·3	9·8	11·0	10·8
Premature Birth ...	17·3	17·5	14·2	14·7	15·8	16·1
Other Developmental Diseases ...	15·8	16·4	12·5	12·5	14·2	14·5
Other Causes	3·9	3·8	2·7	3·3	3·3	3·6
All Causes	59·7	62·8	49·6	52·1	54·8	57·6

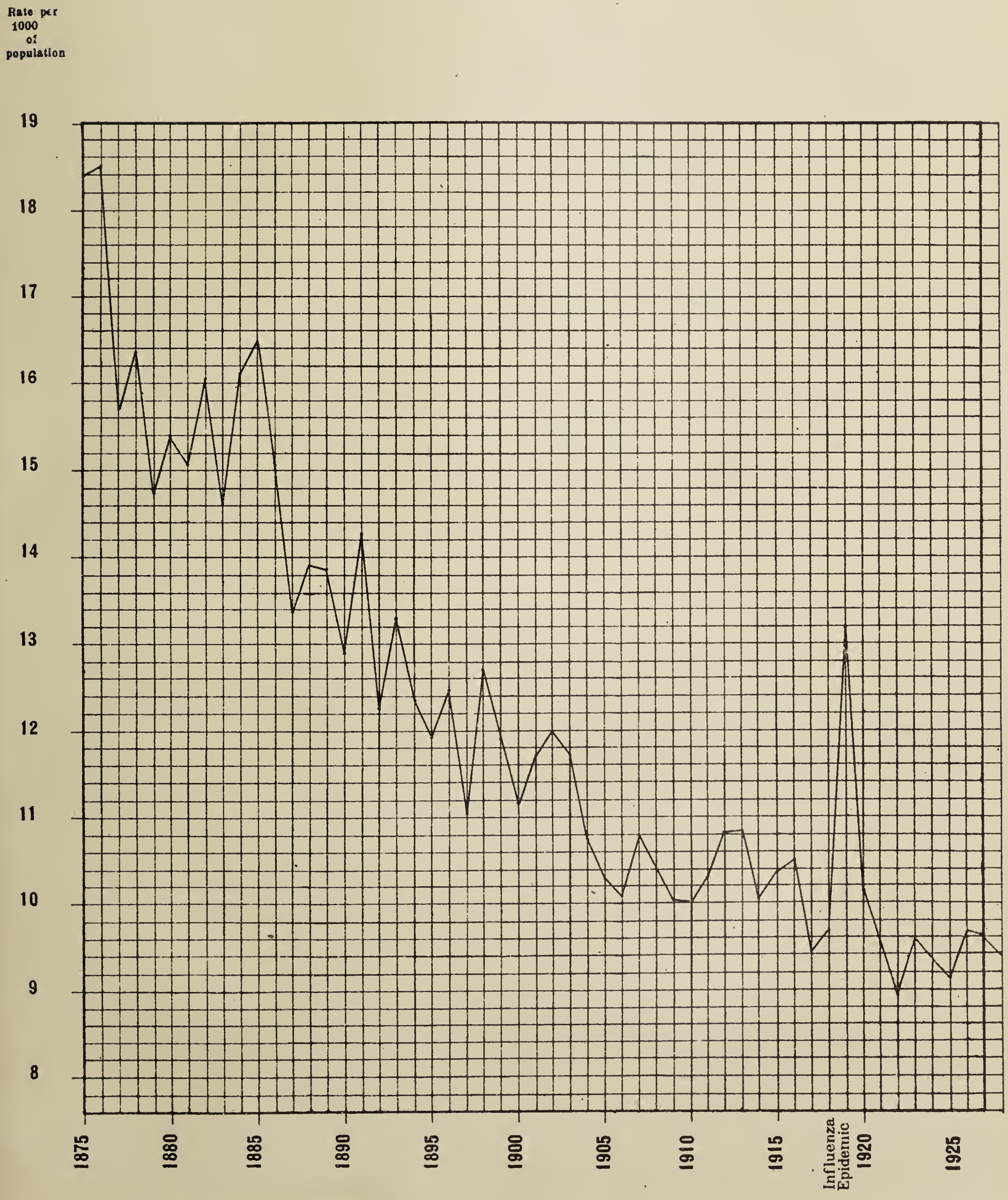
CANCER, TUBERCULOSIS, AND HEART DISEASE.

ANNUAL DEATH RATE PER 100,000 OF POPULATION IN NEW SOUTH WALES, 1875-1928.

HEART DISEASE INCLUDES PERICARDITIS, ENDOCARDITIS, ORGANIC DISEASES, AND ANGINA PECTORIS.
PRIOR TO 1886 SYNCOPE IS INCLUDED.



ANNUAL DEATH RATE PER 1,000 OF POPULATION
IN
NEW SOUTH WALES,
1875–1928.



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A.—PUBLIC HEALTH ADMINISTRATION.

CHEMICAL LABORATORY.

REPORT OF THE GOVERNMENT ANALYST FOR THE YEAR ENDED 31st DECEMBER, 1928.

Staff.

Government Analyst: Thomas Cooksey, Ph.D., B.Sc., F.I.C., F.A.C.I.

Second Government Analyst: William M. Doherty, F.I.C., F.A.C.I.

Senior Assistant Government Analyst: Sidney G. Walton, F.A.C.I.

Assistant Government Analyst: Harold B. Taylor, M.C., D.Sc., F.I.C., F.A.C.I.

Analysts:
- Arthur D. Dibley, A.S.T.C., A.A.C.I.
- Robert G. O'Brien, A.S.T.C., A.A.C.I.
- Isabel M. Knight, B.Sc., A.A.C.I.

2 Laboratory Assistants.

1 Junior Attendant.

Clerk: Grace McGlynn.

Shorthand-writer and Typist: Nellie Armstrong.

The volume of work performed in the Chemical Laboratory during the year 1928 is the greatest that has been recorded since the establishment of the Analytical Branch. A total of 20,658 samples were received for analysis, representing an increase of over 3,000 compared with the previous year. This increase is evidenced in every branch of the work, as a reference to the following table will show:—

	1927	1928
Samples submitted in connection with the administration of the Pure Food Act, comprised.—		
Milks ...	14,103	15,945
Foods and Drugs ...	1,306	1,778
Samples examined for Public Services of State, comprising:—		
Samples submitted by Subsidised Institutions ...	308	383
,, ,, Government Stores Department...	797	1,003
,, ,, Pharmacy Board ...	28	39
Criminal Investigations for Police ...	199	326
Human Viscera ...	47	68
Waters and Sewages ...	502	717
Samples submitted for Industrial Hygiene ...	251	312
,, ,, by Miscellaneous Authorities ...	43	87
Totals ...	17,646	20,658

Milk Samples.—The number of milk samples examined during the year totalled 15,945, of which 389, or 2·5 per cent. of the total examined failed to conform to prescribed standards. This proportion is the lowest yet recorded in any one year in the Laboratory. The adulterations included 174 samples (1·09 per cent.) deficient in milk-fat, 118 samples (0·74 per cent.) deficient in solids-not-fat, and 97 samples (0·60 per cent.) deficient both in milk-fat and in solids-not-fat. Milk samples collected in the metropolitan area numbered 13,731, and those in the country districts 2,214, the percentage of adulterations in the former being 2·1 per cent. of the number examined and in the latter 4·5 per cent.

Food and Drugs.—The samples other than milk analysed for the purposes of the Pure Food Act amounted to 1,778, consisting of 1,700 foods and 78 drugs, pills, &c.

The percentage of adulterated foods amounted to 34·2, this high proportion being largely accounted for by the number of meats treated with sulphites, thereby contravening the regulations under the Pure Food Act.

Sulphur Dioxide and Sulphites.—During the year 1928, the Food Preservation by Sulphur Dioxide Enabling Act, 1920, was added to the list of legal enactments in operation in this State. This Act was passed and put into operation to legalise the Bullot, or similar processes, for the preservation of meat. Under section 4 of the Act, not only meat, but all foods, are allowed to contain sulphur dioxide (or sulphites calculated as sulphur dioxide) in amount not exceeding 3·5 grains per lb. The second paragraph of this section provides that "sulphur dioxide" must be applied in the form of a gas by a method approved by the Board of Health, but no restriction is placed on the method, or methods, by which sulphites, which are permitted as an alternative preservative, may be added. This lack of restriction of the method by which sulphites (assuming it was the original intention to permit their use) should be applied is doubtless inadvertent and is due to the unfortunate wording of the section in question. The point, however, is one of considerable importance, since it appears to me that the section as worded is capable of an interpretation not intended by the framers of the Act, and permits the addition of sulphites to foods up to the limit specified. In connection with the approval by the Board of Health of the method by which sulphur dioxide should be applied, an investigation was carried out in the Chemical Laboratory, full details of which are appended.

Meat, Sausage Meat and Tripe.—A total of 209 samples of raw meat were examined, 136 of which contravened the requirements of the regulations of the Pure Food Act by being illegally preservatised. Out of 746 raw sausages examined, 222 contained preservative in excess of the amount permitted, while 11 out of 150 cooked sausage meats were adulterated by being deficient in meat and by being artificially coloured. Forty-five samples of tripe were found to be illegally preservatised, 22 of which contained sulphites, 5 formalin, 1 nitrite, and 17 boron compounds. A special examination was made of a number of tripes prepared by a process requiring the use of sodium perborate. This process produces an article clean and attractive in appearance, having the advantage of possessing good keeping qualities. The chemical examination of the final product offered for sale did not result in any evidence of the presence of a peroxide, but small amounts of boric acid, in the majority of cases, however, less than one quarter of grain per lb., were present.

Liver extracts having recently been shown to be efficacious in the treatment of pernicious anaemia, a chemical examination of the various commercial preparations on the market was undertaken, the full analytical details of which are appended hereto.

Cod Liver Oil Tablets.—During the year attention was drawn to a preparation, "Cod Liver Oil Compound Tablets." Extensive claims in regard to the therapeutic action are made by the manufacturers, cod liver oil being stated to be "the most active ingredient." It is also claimed that "the extractives used in these tablets contain the entire vitamin content," and "each tablet contains (by extractives) the actual equivalent of a half teaspoonful of cod liver oil." The chemical test for Vitamin A indicated that the quantity present in the tablets examined was not more than would be accounted for by the incorporation of a small amount of cod liver oil in the pill mass, approximately one quarter of a grain per tablet. That is to say, it would require 225 tablets to yield the equivalent of a medicinal teaspoonful of cod liver oil. Biological tests were not carried out in this State, but were made in the laboratories of the British Pharmaceutical Society, London, and showed the absence of both Vitamins A and D. Stringent regulations are necessary to prevent such gross misrepresentations being made.

The following table shows particulars of the number and nature of adulterations :—

Nature of Sample.	Number of Samples.	Particulars of Adulteration.
Acetylsalicylic Acid	2	Excess free salicylic acid.
Tablets	1	Impure derivative of acetyl-salicylic acid.
Beer	1	Excess saccharin.
Camphorated Chalk	6	Deficient in camphor.
Cheese..............................	3	Deficient in milk-fat
,, ...	1	Deteriorated and unfit for use.
Citrate of Magnesia	2	No magnesia present.
Cod Liver Oil Tablets	1	Deficient in cod liver oil and in vitamin content.
Coffee and Chicory Essence	1	Deficient in caffeine.
Cream	7	Deficient in milk-fat.
Cordials	3	Excessive amounts of preservative.
,, ...	2	Deficient in fruit juice.
Epsom Salts	3	Insoluble impurities excessive.
Flavouring essences	2	Imitation articles.
Flour (Self-raising)	5	Deficient in carbon dioxide.
Fruit paste..........................	2	Preservatised with boric acid.
,, pulp	2	Fermented and unfit for use.
Glauber Salts......................	3	Excessive insoluble impurities.
Ice Cream	8	Deficient in Milk-fat.
Iodine, Tincture of	1	Deficient in iodine and potassium iodide.
Lemon Butter	1	Artificially coloured.
Meat—Raw	136	Illegally preservatised.
,, ,, Sausages	222	Contained excess preservative.
,, Cooked Sausages	4	Artificially coloured.
,, ,, ,, ...	4	Excessive farinaceous admixture.
,, ,, ,, ...	3	Deficient in meat.
,, Tripe	22	Illegally preservatised with sulphites.
,, ,, ...	17	,, ,, ,, boron compounds.
,, ,, ...	5	,, ,, ,, formaldehyde.
,, ,, ...	1	,, ,, ,, nitrite.
Milk	174	Deficient in milk-fat.
,, ...	118	,, solids-not-fat.
,, ...	97	,, milk-fat and in solids-not-fat.
,, (Condensed)	1	,, milk-fat.
Ointment (Zinc)	2	,, zinc oxide.
,, ,, ...	1	Lard not used as base.
Pills (Bromine)	1	Bromine not declared.
Raisins	2	Boric acid present.
Sago	1	Deteriorated article.
Seidlitz Powders	4	Deficient in weight.
,, ,, ...	2	,, ,, and in sodium bicarbonate.
Soap	1	Excess water : contained sodium silicate.
Spirits	5	Below prescribed strength.
Tomato Sauce	7	Prepared from unsound fruit.
Tooth Powder (Carbolic) ...	1	Deficient in carbolic acid.
Wine	3	Contained added water and saccharine matter.
,, ...	2	Prepared with diluted grape juice.
,, ...	3	Slight excess of proof spirit.

Public Services.—A total of 2,934 samples were examined in connection with the public services of the State. Subsidised institutions forwarded 383 samples, including foods for examination as to quality and comparison with contract standards, drugs for determination of purity and strength, cow's milk for standardisation of dairy herd, human milk and clinic emulsion submitted by Baby Clinic in connection with the question of infant feeding, and other samples of a miscellaneous nature.

The Government Stores Department submitted 1,003 samples for examination, for the purpose of fixing suitable standards and controlling the quality of articles supplied under contract to the various Government Departments of the State. The majority of these samples consisted of lubricants, disinfectants, ink and soap, but in addition arsenic, laundry blue, chicory, honey, meat extract, condensed milk, various drugs, electroplated spoons, waterproof cloth, solder, turpentine, paints and wood-preserving oil were examined.

The Pharmacy Board submitted a total of 39 samples collected in connection with the administration of the Poisons Act, and also of the Police Offences Amendment (Drugs) Act.

The Police Department submitted 316 exhibits for examination in connection with criminal investigations. The cases included charges of murder, suicide, death by misadventure, administration of abortifacients, criminal assault and rape, sly grog selling, malicious throwing of corrosive liquid, false pretences, stealing, safe-breaking, counterfeit coining, and possession of drugs in contravention of the Police Offences Amendment (Drugs) Act. In the latter connection, 69 exhibits were examined, consisting of 49 exhibits of cocaine, 16 of opium, and 4 of morphine. The analytical results in each case furnished evidence warranting prosecution for being illegally in possession of drugs in contravention of the Act.

Police and Coroners forwarded exhibits for examination in connection with 68 deaths which formed the subject of inquiry. Among the unusual poisons found in the viscera submitted were arsenate of lead (fruit spray), mercury (a poison which has a very corrosive action on the organs), nicotine, and atropine, the latter derived in the case under notice from liniment of belladonna. In other cases death was found to have been due to strychnine, arsenic, morphine, opium, carbolic acid, formalin (a poison not often used), prussic acid, veronal and cyanide. In 27 cases the analytical examination did not furnish evidence of the presence of poisons. In 4 cases action was taken by the Crown on murder charges, in two of which death was due to slow arsenical poisoning. Arsenic has well-defined preservative properties, and in the cases under notice the poison was administered in comparatively small doses over a more or less prolonged period, thus enabling its distribution throughout the system, as a result of which the bodies on exhumation were found to be in an excellent state of preservation, although in one instance over a month elapsed after burial. Representative portions, including the organs, muscles, soft tissue, bone, hair, and finger and toe nails, were submitted for chemical examination. The heaviest proportions of arsenic were found in the stomach and intestines and in the liver, but appreciable quantities were present in all the exhibits analysed. In one of these cases, the poison was administered in the form of arsenate of lead (fruit spray), both lead and arsenic being found in the organs.

Deaths from Drowning, &c.—During the year specimens of blood were forwarded for analysis in connection with deaths supposed to have been due to drowning. It has been found by Gettler (see *U.S. Naval Medical Bulletin*, May, 1922) that in cases of drowning in salt water the blood of the left chamber of the heart contained more sodium chloride than that of the right chamber. In cases of drowning in fresh water the reverse holds, the blood in the left heart containing the lower percentage of sodium chloride. Figures obtained in definite cases of drowning show a difference in the chloride content of the blood of the two chambers of the heart amounting to at least 19 milligrammes of sodium chloride per 100 grammes of blood. It is of interest to note that in every case submitted the analytical figures supported the medical diagnosis as to the cause of death, and the method has proved extremely valuable in doubtful cases. The following are the figures obtained in 7 cases examined in the Laboratory :—

No.	Sodium Chloride. mgms. per 100 gms. blood.		Conclusions drawn from chemical examination.
	Left Heart.	Right Heart.	
1	566	494	Salt water drowning.
2	603	603	Death not due to drowning.
*3	424	450	Fresh water drowning (see note below).
4	440	441	Death not due to drowning.
5	547	466	Salt water drowning.
6	612	512	Salt water drowning.
7	540	492	Salt water drowning.

* In the case of No. 3 carbon monoxide was also present in the blood to the extent of 50 per cent. saturation. The man, while working in a sewer, was overcome by an escape of gas, and fell unconscious into a comparatively small amount of water.

The following is a brief description of the method of determination used :—*

A definite weight or volume of the blood is suitably diluted and the protein precipitated by a solution of picric acid. The precipitate is removed by filtration, and to an aliquot portion of the filtrate is added a definite volume of silver nitrate solution of known strength. After shaking, the precipitate is allowed to settle, and the liquid filtered, the excess of silver nitrate being estimated in a portion of the filtrate by means of a standard potassium iodide solution.

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* For full details see "Determination of Chloride Content of Blood of Heart in cases of Death by Drowning," by Gettler (*U.S.A. Naval Bulletin*, May, 1922.)

In one case in which death was due to asphyxiation by benzene (benzol) fumes, no chemical alteration was detected in the blood, but an unusual feature was noted, namely, that the blood did not clot on keeping.

In two cases in which death was due to gas poisoning, carbon monoxide was present in the blood to the extent of 50 per cent. saturation. A case of some interest to the motoring public was that in which a man was found dead sitting at the wheel of his car, which was in the garage with the engine still running. Death was found to be due to poisoning by carbon monoxide, one of the products of incomplete combustion.

Industrial hygiene.—A total of 312 exhibits were examined for the authorities controlling industrial hygiene in connection with claims under the Workers' Compensation Act and conditions of employment. These samples included post-mortem specimens, urine and faeces, dust, lubricants, paints, silica, &c.

Country Water Supplies.—Municipal, departmental and other authorities forwarded 613 samples of water for analysis in connection with the provision of country water supplies, and for the determination of the suitability, or otherwise, of waters in drought-stricken areas for domestic use, &c.

Sewage disposal and effluents.—Municipal and departmental authorities also submitted 101 samples of sewage for the purpose of testing the efficacy of sewage installations, and to control the discharge of offensive drainage.

Miscellaneous.—Various authorities submitted 87 samples, including human and animal viscera, food and other exhibits suspected to contain poison, medicines, disinfectants, foods, &c.

As this is the last report which I shall issue in my capacity of Government Analyst, I think it is only fitting that I should take this opportunity of expressing my appreciation of the efficient and willing co-operation and assistance which has at all times been given me by my staff. The large amount of work carried out by a staff comparatively few in numbers is in itself evidence of the value of the services rendered.

Appended are notes of investigations carried out in regard to the Bullot process for the preservation of meat, and the composition of commercial liver preparations used in the treatment of pernicious anaemia.

THOMAS COOKSEY,
Government Analyst.

SULPHUR DIOXIDE IN MEAT—INVESTIGATION INTO THE BULLOT PROCESS FOR THE PRESERVATION OF MEAT

For the purpose of the investigation, the treatment of the meat intended for examination was carried out in an enclosed space having an approximate dimension of 20 feet in length, 8 feet in width and 7 feet in height. Under normal working conditions, this space would be sufficient for the treatment of 150 carcases of sheep. The carcases of one sheep, one pig, a half side of beef, and sausages and smallgoods (heart, liver, kidney, &c.) were treated. The powder used in the generation of the gases was analysed and found to be of the following composition :—

Saltpetre	11 per cent.
Sulphur	22 ,,
Charcoal and bark	67 ,,
Essential Oil	Small quantity present.

It was particularly noticeable that where muscular tissue was exposed to the fumes, discolouration was evident to depths varying to one-half inch. Where, however, the tissue was protected with a layer of fat and skin, the penetration of the SO_2 depended on the thickness of the protecting layer, as did also the discolouration (if any). In the case of the leg of pork, for instance, which was covered with a layer of fat and skin one-half inch thick, very slight discolouration was apparent. It will be seen by a comparison of the results of analysis of the mutton and pork in Table I (attached) that the penetration of the SO_2 is dependent on the thickness of the covering layer of skin and fat. The leg of mutton, which was covered with a thin skin only, contained 7·1 grains of SO_2 per lb., while the leg of pork, protected by a half-inch layer of skin and fat, contained only 3 grains per lb. The smallgoods (liver, kidney, heart, &c.), which have comparatively large surfaces without a protecting skin, absorbed large quantities of SO_2 (see analyses in Table I).

Samples of treated and untreated mutton and pork were suspended under similar conditions, at room temperature, for the week 8th to 14th August (inclusive). The maximum temperature during this time was 76·8° F. and the minimum temperature 47·4° F., the average mean daily temperature being 58·1° F. The treated mutton and pork appeared to be in good condition at the end of this period, but the untreated meat showed distinct signs of decomposition.

The treated beef did not keep well. As, however, it was delivered to the Laboratory in sections, the test as to its keeping qualities could not be carried out under normal conditions, since, presumably, the whole carcase is usually allowed to hang uncut until it is required to be put into consumption.

An analytical table is appended, which shows the amounts of sulphur dioxide present in samples cut from different portions of the carcases; the loss of sulphur dioxide on keeping the meat uncooked, and the amount of sulphur dioxide lost in cooking.

Sulphur Dioxide Content of Meats treated by the Bullot Process.

Time elapsing between treatment and analysis.	Kind of Meat.	Description of Sample Analysed.	Weight taken for analysis.	Sulphur Dioxide.	Remarks.
			grams.	grains per lb.	
1 day	Roast Beef, 1st Cut (Raw) ...	Average* ...	100	10·4	Meat bleached where exposed to gas.
2 days	,, ,, 2nd ,, ...	Outside ...	100	8·0	Colour normal except small part exposed to gas.
2 ,, ...	,, ,, ,, ,, ...	1 in. in	100	0·3	
2 ,, ...	,, ,, ,, ,, ...	Average* ...	100	2·0	Sample approximately 2½in. thick.
2 ,, ...	,, ,, ,, ,, ...	Average fat	100	0·9	
2 ,, ...	Thick Flank of Beef (Raw) ...	Outside ...	100	3·5	Colour normal except small part exposed to gas.
2 ,, ...	,, ,, ,, ,, ...	2 in. in	100	Less than 0·1	
2 ,, ...	,, ,, ,, ,, ...	Average* ...	100	1·0	
2 ,, ...	Beef Bone..............................	Average* ...	100	0·15	
1 day	Leg of Mutton (Raw)	Average* ...	100	7·1	Bleached where exposed to gas.
3 days	,, ,, ,, ...	....	100	3·6	3·5 grains SO_2 per lb. lost on keeping 2 days.
8 ,, ...	,, ,, ,, ...	....	100	1·1	6·0 ,, ,, ,, ,, ,, 7 ,,
3 ,, ...	,, ,, (Cooked)	....	76	2·5	Boiled for 1 hour with approximately 4 parts water. Weight reduced from 140 grams before cooking to 76 grams after cooking.
8 ,, ...	,, ,, ,, ...	....	100	0·6	Baked; weight 2–3 lbs.
2 ,, ...	Leg of Pork (Raw)	Average* ...	100	3·0	Bleached where exposed to gas.
8 ,, ...	,, ,, ,, ...	....	100	0·9	2·1 grains SO_2 per lb. lost on keeping 6 days.
UNTREATED	Sausages not treated by Bullot process, but containing SO_2 within permitted limit. (Raw.)	Average* ...	100	2·0	Similar to sausages used in Bullot experiment.
1 day	Sausages similar to above, and treated by Bullot process. (Raw.)	Average* ...	100	24·2	Bleached where exposed to gas.
3 days	Sausages (Treated), (Raw.) ...	....	100	23·4	0·8 grain per lb. SO_2 lost on keeping 2 days.
3 ,, ...	,, ,, (Cooked.)	....	95	20·2	Fried for 20 minutes; had acid taste and odour of SO_2 when cooked; weight reduced from 141 grams before cooking to 95 grams after.
1 day	Sheep's liver, &c. (Raw.)	Average* ...	100	24·1	Bleached on outside.
1 ,, ...	Pig's liver, &c. (Raw.)	Average* ...	100	25·2	,, ,,
3 days	,, ,, ,, ...	....	100	14·2	11·0 grains SO_2 per lb. lost on keeping 2 days.
3 ,, ...	,, ,, (Cooked.)	....	94	6·5	Boiled with approximately 4 parts of water for 1 hour. Weight reduced from 138 grams before cooking to 94 grams after cooking.
1 day	Bullock's Heart (Raw)	Average* ...	100	8·9	Bleached on outside.

*Average sample is a portion taken right through the sample so as to, as nearly as possible, represent the whole.

NOTE.—The mutton and pork used in the experiment were exposed to the air; the small goods (pig's liver, &c.) were kept loosely wrapped in paper. Taking into consideration the loss in weight in cooking, the actual amount of sulphur dioxide lost on boiling represents two-thirds of the total present, and one-third on frying.

THE CHEMICAL COMPOSITION OF COMMERCIAL LIVER PREPARATIONS USED IN THE TREATMENT OF PERNICIOUS ANAEMIA.

Since the discovery of Drs. Minot and Murphy of the success in the treatment of pernicious anaemia obtained by the administration of liver, and the subsequent preparation of an active fractional extract by Dr. Cohn, many commercial preparations have been placed on the market. Some of them take the form of the dried or desiccated liver substance, whilst others are claimed to be highly active fractions in which the essential principle can be given in concentrated form. The chief disadvantage of the latter type has been its hygroscopic nature, but this is now overcome by packing in sealed glass tubes in dosal quantities.

As the whole subject of the use of liver in the treatment of pernicious anaemia is one of wide interest, a chemical examination of the various commercial articles offered for sale was undertaken, the results of which are shown in the table appended hereto.

The composition of the active principle in liver is at present unknown. The analyses, therefore, are not intended as a comparison of the efficacy of the preparations examined, but rather to ascertain as far as possible whether the statements accompanying the articles were correct, and to see that no adulteration was being practised.

Of the two dried liver substances examined, it may be said that both appeared to be correctly described as having a concentration of four times that of fresh liver, although one sample had considerably more fat than the other.

A good deal of variation in composition, however, is shown in the concentrated fraction (" extracts "), but this may be accounted for by different processes of manufacture. It would appear to be highly desirable to adopt standard methods of manufacture to ensure that liver preparations are of uniform composition, containing the active principle in adequate quantity.

The amounts of copper, iron, and zinc were determined in a desiccated substance and in a fractional extract. The other samples analysed were not sufficient to permit of these determinations being made. From the results obtained in the two samples tested it is inferred that the metallic content bears no relationship to the therapeutic activity.

Composition of Commercial Liver Preparations used in the treatment of Pernicious Anaemia:

Sample No. Country of Manufacture Description of Sample	(1) Australia. Desiccated Liver.	(2) England. Liver Extract.	(3) U.S.A. Desiccated Liver.	(4) U.S.A. Liver Extract.	(5) England. Liver Extract.	(6) U.S.A. Liver Extract.	Average Composition of Fresh Ox Liver.
Weight of Substance in Container	114 gms.	7·26 gms.	28·6 gms.	5·88 gms.	9·23 gms.	2·11 gms.	......
Labelled Equivalent of Fresh Liver corresponding to	456 ,,	226 ,,	114 ,,	100 ,,	226 ,,	100 ,,	......
Concentration of Article to Fresh Liver	4 : 1	31 : 1	4 : 1	17 : 1	24·5 : 1	47 : 1	......
Percentage of Water	7·80	12·65	7·45	18·60	12·52	9·20	71·2
,, Ash	2·97	21·2	5·35	9·95	11·53	9·94	1·6
,, P_2O_5	1·58	6·03	2·48	2·62	4·19	5·61	......
,, Nitrogen	9·72	7·52	9·63	7·47	2·92	11·16	......
,, Protein (N. × 6·3)	61·2	47·4	60·6	47·0	18·4	70·3	20·4
,, Fat	22·7	Nil	8·0	Nil	Nil	Nil	4·5
,, Carbohydrates (by diff.)	5·33	18·75	18·6	24·45	57·55	10·56	2·3
Metals (mgms. per 100 grammes)—							
Copper	3·5	......	......	1·8	......	......	......
Iron	22·5	......	......	2·5	......	......	......
Zinc	11·0	......	......	3·1	......	......	......

PURE FOOD ACT, 1908.

REPORT OF THE CHIEF INSPECTOR ON THE GENERAL ADMINISTRATION OF THE PURE FOOD ACT, 1908, FOR THE YEAR ENDED 31st DECEMBER, 1928.

Staff.

Chief Inspector: ARTHUR KENCH. Senior Inspector: CHARLES V. FRANCIS. 10 metropolitan inspectors, 2 country inspectors, and 1 assistant.

I HAVE pleasure in submitting a report of the work performed during the year by officers of the Pure Food Branch. The executive work under the Pure Food Act includes the supervision of all places where food or drugs are prepared, stored or exposed for sale. Particular attention is given to the supervision of the milk supply; to the manufacture of jams, and fruit and vegetable preserving; condiments, smallgoods, and cordials; and to the general conditions of grocery, fruit, vegetable, fish, and meat shops, both wholesale and retail.

Bread Supply.—Special inspectorial work has been carried out in connection with the preparation and delivery of bread and pastry, and many bakeries have been remodelled and repairs effected under the supervision of departmental officers.

Milk Supply.—In connection with the supervision exercised over the milk supply, 9,694 samples were procured by departmental officers, and submitted to the Government Analyst for analysis. Prosecutions successfully undertaken against traders who were defrauding the public by supplying adulterated milk numbered 166, and the fines and costs recovered in connection therewith totalled £888 13s. In addition, 334 samples of milk were procured and submitted to the Microbiological Laboratory for examination for tubercle bacilli and estimation of the bacterial content.

Cream.—Forty-nine samples were procured, the results of analysis warranting four prosecutions. Fines and costs recovered amounted to £20 12s.

Meat.—Use of Preservative Dusting Powders.—The question of preservation of meat has been thoroughly investigated; 1,233 samples of meat, including sausages, were obtained and submitted to the Government Analyst for analysis; in 328 cases it was found that traders had been dusting the surface of the meat with preservative powder. Prosecutions were undertaken in every case, and resulted in fines and costs amounting to £1,129 15s. being imposed.

Other Foods and Drugs.—A total of 2,022 samples of foods and drugs were submitted for analysis, and 355 traders were prosecuted. The fines and costs amounted to £1,203 17s.

Premises used for Preparation, Sale, and Storage of Food.—Inspections were made of 10,177 premises used for or in connection with the preparation, sale, or storage of food. Prosecutions undertaken for unclean premises, &c., numbered 92; the fines inflicted totalled £598 18s. In addition, over 666 notices were served on traders requiring structural alterations to premises.

Seizure and Condemnation of Unsound Food.—During the year regular supervision has been exercised over food products in wholesale and retail stores, bulk stores, auction rooms and elsewhere. Over 181 tons of foodstuffs and 28,000 packages of assorted foods were found to be in so damaged or deteriorated a condition as to be unfit for food, and were seized and destroyed; 11 prosecutions were instituted and resulted in fines and costs amounting to £58 12s. The seizures included about 14,000 pieces of damaged crockery in use in restaurants, &c.

Venereal Diseases Act.—At the request of the Commissioner administering this Act special investigations were made concerning breaches of the Act, 3 prosecutions were undertaken and resulted in collection of fines and costs amounting to £10 16s.

Tables are appended showing the nature of the samples taken during the year, prosecutions undertaken, &c. A detailed statement of the foods and drugs submitted for examination will be found in Table I of the Government Analyst's report (p. 13).

ARTHUR KENCH,
Chief Food Inspector.

TABLE I.—Summary of work performed by Pure Food Officers for year ending 31st December, 1928

Analysis of Samples of Milk.	Samples taken by—		1928.	1927.
	Departmental Officers.	Municipal and Shire Council Inspetors.	Total.	Total.
Number of samples taken from all parts of the State	9,694	6,262	15,956	12,573
Number of samples below the standard	268	102	370	362
Number of warnings	102	43	145	155
Number of prosecutions	166	59	225	207
Amount of fines and costs	£888 13s.	£252 10s. 6d.	£1,141 3s. 6d.	£898

*Foods and Drugs, other than Milk.** (See Table I, p. 13.)

	1928.	1927.
Number of samples taken from all parts of the State	2,022	1,449
Number of samples below standard	397	231
Number of warnings	42	18
Number of prosecutions	355	213
Amount of fines and costs	£1,203 17s.	£726 4s.

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* Local authorities (municipal and shire councils) do not, as a matter of routine, collect samples of foods and drugs other than milk.

Food unfit for Consumption, Seized and Destroyed.

	1928.	1927.
Number of prosecutions	11	17
Amount of fines and costs	£58 12s.	£93

Inspection of Premises used for Preparation, Sale or Storage of Food.

	1928.	1927.
Number of premises inspected in all parts of the State	10,177	10,729
Number of notices issued	666	814
Number of prosecutions	92	84
Amount of fines and costs	£598 18s.	£492 16s.

Summary of Legal Proceedings for Breaches of the Pure Food Act and Regulations, 1928.

	1928.		1927.	
	Prosecutions.	Fines and Costs.	Prosecutions.	Fines and Costs.
		£ s. d.		£ s. d
Adulterated milk	166	888 13 0	168	752 2 0
Adulterated foods and drugs	355	1,203 17 0	213	726 4 0
Goods seized and destroyed	11	58 12 0	17	93 0 0
Unclean premises	92	598 18 0	84	492 16 0
General breaches of Act and Regulations*	96	330 0 0	153	286 7 0
Breaches of Venereal Diseases Act and Regulations†	3	16 4 0	9	77 12 0
Grand Total	723	3,096 4 0	644	2,428 1 0

* Uncleanly habits in preparation, handling, delivery, or storage of food; use of dirty or unsuitable utensils, etc.

† See report on V.D. (p. 41)

Table II.—Summary of work carried out under the Pure Food Act, 1908, from the date of its operation (October, 1910), to 31st December, 1928.

Collection of samples, inspections, &c.		Total below standard.	Prosecutions undertaken.	Amount of Fines and Costs.
				£
No. of milk samples	107,053	6,462	3,192	16,162
No. of food and drug samples (other than milk)	15,743	3,220	1,656	5,280
Premises inspected	131,037	1,855	1,855	9,314
General breaches of Act	829	......	1,722	6,266
Total samples collected, inspections, &c.	254,662	11,537	8,425	£37,022

DAIRIES SUPERVISION ACT, 1901,

AND

CATTLE SLAUGHTERING AND DISEASED ANIMALS AND MEAT ACT, 1902.

REPORT by the Chief Dairy Inspector on the activities of the Dairies Supervision Branch, Department of Public Health, for the year ending 31st December, 1928.

Staff.—Chief Dairy Inspector, T. V. Blomfield; Senior Inspector, W. A. Mackie; 2 Metropolitan, and 16 Country Inspectors.

Number of miles travelled in inspectorial work, 132,337; dairy premises visited, 17,400; dairy cattle inspected, 512,461.

Number of dairy cattle condemned for tuberculosis, 673; actinomycosis, 155; cancer, 121; other diseases, 24. Total 973.

Number of cattle submitted to the tuberculin test, 916; reacted, 162.

Metropolitan district.—During the year 4,798 milch cows and 2,684 dry cows were inspected at the Flemington Milch Cow Sale-yards. These yards are the principal port of entry into the suburban dairies, thus affording an opportunity for a close examination of dairy cows sold at this centre for the purpose of producing milk for human consumption. The health of the animals consigned for sale was satisfactory, none being condemned.

Cattle Slaughtering.—972 country slaughter-houses were inspected; beef cattle examined, 2,201; number condemned 2 (tuberculosis).

North Coast Bacon Factories.—Meat Inspectors are stationed at the following North Coast centres:—O. H. Lowe and J. H. Kirkland (Byron Bay), A. J. Clogg (Lismore), G. R. McCredie (Ballina), J. Elliott (Grafton).

The number of animals slaughtered for human food, all of which were subjected to a searching post-mortem examination by the above staff, is as follows:—Bullocks 1,136 (condemned for tuberculosis 9); cows 1,822 (tuberculosis 41); pigs 69,904 (tuberculosis 1,773); calves 1,115 (none condemned); sheep 3,720 (none condemned.)

Prosecutions.—88 prosecutions were instituted for breaches of the Acts governing the work of this Branch, and fines and costs amounting to £415 were paid by defaulting traders.

Staff.—During the year an exchange of districts was effected between Mr. J. Kenny of Bega and Mr. N. H. Litchfield of Bathurst, and advantage was taken of an additional appointment, viz., Mr. N. L. C. Jones, to increase the supervision within the metropolitan area which renders all the dairy herds and premises within that area subject to a close and frequent inspection.

Each member of the staff has been equipped with a Minit Milk-Sediment Tester, and this apparatus has proved very useful, and considerably enhances the efficiency of inspectorial work. The practical demonstration afforded by the exhibition of the pad, through which the milk has been forced by air pressure, appeals alike to the producer and consumer as a simple and reliable method for detecting the presence of dirt in milk.

Numerous samples of milk have been collected for the purpose of ascertaining their bacterial content, and on the whole they have been satisfactory. In all cases where the number of bacteria exceeded the statutory limit, a visit was paid to the dairy premises for the purposes of ascertaining the reason for the excessive count, and the dairymen were advised as to the precautions which should be taken to exclude the invading bacteria, with very satisfactory results.

All the cattle kept at the State Hospital controlled by this Department were again submitted to the tuberculin test without any reactions taking place. The tuberculin manufactured in the departmental laboratory continues to give very satisfactory results, and has considerably widened the sphere of operations in this respect.

T. V. BLOMFIELD,
Chief Dairy Inspector.

SUMMARY of the number of registered dairymen and milk vendors, and approximate number of dairy cattle on registered premises in New South Wales at 31st December, 1927 and 1928, compiled from returns furnished by Local Authorities under the Dairies Supervision Act, 1901.

District.	Number of Registered Dairymen.		Number of Milk Vendors.		Number of Dairy Cattle on Registered Premises.	
	1927.	1928.	1927.	1928.	1927.	1928.
Municipalities—						
Metropolitan	346	330	4,838	4,900	9,234	9,000
Metropolitan Police	190	190	17	20	3,453	3,500
	536	520	4,855	4,920	12,687	12,500
Country Municipalities	2,373	2,451	3,843	3,870	61,065	61,256
	2,909	2,971	8,698	8,790	73,752	73,756
Police Districts	...	18,789	314	390	836,077	836,488
Total	21,478	21,760	9,012	9,180	909,829	910,244

REPORT OF THE CHIEF SANITARY INSPECTOR FOR THE YEAR ENDED 31st DECEMBER, 1928.

Staff.—Chief Sanitary Inspector, E. A. Cresswick, M.R.S.I.; 7 certificated inspectors and 1 certificated inspector and licensed surveyor.

Routine and General.

Inspection of Country Towns.—During 1928 primary inspections were made of twelve country towns and the local authorities advised of the improvements required.

Thirty-seven towns and villages were systematically reinspected for the purpose of ascertaining the action taken by local authorities to effect improvements which had been previously recommended.

Seven outbreaks of infectious diseases were investigated in different parts of the country.

It was found that many local authorities are maintaining an active interest in sanitation, and this has resulted in a general all-round improvement. In several instances, however, conditions were found to be still most unsatisfactory, necessitating stringent action by the department against the councils concerned.

Under section 3 of the Public Health (Amendment) Act, 1915, notices were served on five councils regarding sanitary and garbage services, namely :—

Scone and Kandos.—To instal garbage removal services in terms of ordinance 51 of the Local Government Act.

Trangie and Delegate.—To instal services for the removal of nightsoil.

Balranald.—To efficiently carry out the sanitary service in accordance with the provisions of ordinance 44 of the Local Government Act.

A recommendation was made to the Minister in terms of section 94 of the Local Government Act, 1919, that the councils of the municipalities of *Queanbeyan, Condobolin* and *Windsor* be required to appoint a qualified health inspector approved by the Board. A period not to exceed three months was recommended to be allowed for the carrying out of this instruction, failing which it was recommended that action be taken for appointment by the Governor of such inspectors.

In several other instances councils were recommended to employ certificated health inspectors.

Sanitary and Garbage Depot Sites.—Seventy-seven sanitary and garbage depots were inspected, and the suitability of 34 proposed depot sites was investigated and reported on. In some instances the depots were found to be unsatisfactory, and action was taken for their improvement. Several offenders were prosecuted for breaches of Local Government ordinances, and local authorities were requested to have necessary improvements carried out. Upon reinspection, considerable amelioration was found in most cases.

Insanitary Buildings.—Inspections were made of 113 insanitary dwellings; of these 90 were in such a condition as to be unfit for human habitation or occupation, some being practically beyond repair, and closing orders were issued to local authorities, who were recommended to close the buildings. In other cases where the dwellings were structurally sound, recommendations for improvements were forwarded to councils for attention and action.

Homebush State Abattoirs.—Fifty-two inspections were made of the by-product plants and drainage at the Homebush State Abattoirs. The premises generally have been conducted in a satisfactory manner. The plant for destruction of offensive vapours generated in the various processes has been reconstructed and rendered more efficient, and improved methods of treating the drainage has been adopted, resulting in fewer complaints from residents in adjacent areas.

General Inspections and Investigations comprised examinations of 104 existing septic tanks and proposed sites for septic tanks; 156 septic tank plans from councils and others; 34 complaints of drainage and other nuisances; 10 aborigines and other camp sites; 430 noxious trade premises; 20 slaughtering premises; 63 food premises, including butchers' shops; 336 unhealthy building lands; 26 public hospitals; 43 private hospitals, new and existing; 21 public and private schools; 144 theatres and public halls; 6 dairies; 4 cemeteries; 18 barbers' shops; 20 wharves and ferries; 9 showgrounds and racecourses; 8 inquiries into pollution or possible pollution of water supplies; 200 inspections of bedding and upholstery factories; 2 drainage schemes in country towns; 14 chemical closets (including one test of a new apparatus); 5 public baths; and 125 hotels.

Pollution of Harbours, Rivers and Watercourses.—Action was taken in every instance where there appeared to be danger of pollution by trade or other wastes, or where a nuisance was being caused.

Routine Destruction of Rats.—Systematic trapping and poisoning of rats have been carried out on the harbour waterfront from Woolloomooloo Bay to Blackwattle Bay by the departmental rat-catchers. The 409 rats and 20 mice caught were examined in the Microbiological Laboratory and no evidence of plague infection was found. The Sydney Harbour Trust continues to employ a staff of rat-catchers who co-operate with the departmental inspectors. The decrease in rat infestation of wharves and dwellings along the waterfront is very marked and is due to the permanent improvements carried out by the Harbour Trust.

Noxious Trades.—The Noxious Trades Act was extended to the following shires and municipalities from 1st December, 1927.

Municipalities.

Wollongong
Central Illawarra.
Shellharbour.
Kiama.
Jamberoo.
Gerringong.
Broughton Vale.
Berry.
Nowra.
South Shoalhaven.
Ulladulla.
Bega.

Shires.

Clyde.
Eurobodalla.
Mumbulla.
Imlay.

During the year a departmental officer made an inspection of the fifty-two noxious trades premises situated within these districts with the object of assisting local authorities with registration of premises, and advising them as to the requirements necessary.

The Noxious Trades Act now applies to the whole of the coastal district of the State, as well as to several inland areas. Apparatus for treatment of wastes and for the destruction of offensive vapours, as well as the methods of conducting and maintaining the premises, were found to be much improved at numerous works. Thirty reinspections were made to ascertain if improvements recommended had been carried out.

Prosecutions.—Prosecutions were instituted under the Local Government Ordinances, the Pure Food Act Regulations, the Cattle Slaughtering and Diseased Animals and Meat Act Regulations, and the Theatres and Public Halls Act, the fines imposed totalling £223 18s. 6d.

MOSQUITO ERADICATION.

Ordinance 41 dealing with mosquitoes operates only in those municipalities or shires to which it is applied by proclamation by the Governor at the request of the council. The ordinance has been extended to eighty-nine municipalities and to forty-two towns, villages, urban areas, and parts of sixteen other shires. Some local authorities have done exceptionally good work with regard to the prevention of mosquito breeding, while a larger number have handled the matter only indifferently. In the majority of instances no effective action has been taken by the local authorities.

It appears advisable that application of this ordinance should be made mandatory to all areas, so that definite action can be taken in mosquito-infested districts.

Land Notified as Unfit for Building Purposes under Section 55 *of the Public Health Act*, 1902.—Following the appointment of a licensed surveyor to this staff a considerable amount of survey work has been effected. An extensive series of bench marks has been established throughout several notified areas; these will considerably simplify supervision in connection with the filling up of these areas in the future. Four new areas were notified during the year.

An extensive scheme of drainage and filling submitted for the treatment of land at Rose Bay has been examined and reported upon.

A report was also furnished regarding the flooding of a number of houses in Collin street, Narrabeen, and closing orders were recommended to be issued in connection with five of these.

To comply with the request of the Registrar-General that unhealthy building land covered by notice should be registered (Conveyancing Act, 1919), the whole of the proclaimed lands have been reviewed. It was found upon inspection that in twenty instances the land had been improved, and the proclamations are now being revised.

Correspondence included replies to 2,700 solicitors' inquiries seeking information in regard to proclaimed land.

The policy of this Department in notifying unsuitable land under section 55 of the Public Health Act is proving itself to be more and more justified. Settlement on these undesirable areas has been restrained until progress of the locality has made it a payable proposition for owners to deal with the areas in larger reclamation schemes. Such schemes are now in operation at Rockdale, Narrabeen, Newport and Woollahra. As a result of such reclamations, swamp land which would have remained mosquito-breeding areas and a menace to the neighbourhood has become eagerly sought after as building land, realising prices up to £10 per foot.

HOOKWORM CAMPAIGN.

In April, 1928, an officer of this branch was sent to Lismore to assist Dr. W. K. Flook, Medical Officer of the Education Department, in an intensive survey of the North Coast in connection with the prevalence of hookworm disease. The following being the plan of campaign :—

1. All schools which children known to have previously suffered from hookworm disease were attending were visited.
2. Lectures were delivered to the school children, stressing the danger of hookworm disease and the necessity for the forwarding of specimens of excreta.
3. Specimen containers were issued to the school children. Containers were also issued for children not attending school.
4. Homes of all children previously infected were visited to obtain specimens from all occupants of the house, inspect the sanitary arrangements and make inquiries as to the possible origin of infection in these cases.
5. Specimens were forwarded from all the schools in the infected areas to the Commonwealth Health Laboratory, Lismore, where they were examined.

6. On receipt of results from the Laboratory, the homes of all persons found infected during this survey were visited, all infected persons treated, the sanitary arrangements inspected and arrangements made to forward further specimens from all occupants of the house after a suitable interval after treatment.

   This return of specimens after treatment resulted in the discovery of quite a number of positive cases among the older and younger occupants who had not previously forwarded specimens. Treatment was forwarded to these families and a system of continuous re-treatment and re-examination of specimens instituted until the households were found clear of infection.

7. In each town or shire the responsible officers of the local authorities (*i.e.*, the town clerk, shire clerk, health inspector, or police officers) were visited and their co-operation obtained in the work.

The following table shows the total percentage of infection among Europeans and aborigines in the area examined. The preponderance of infection among aborigines discloses the need for control of their migration from place to place with the risk of spreading infection into clean areas.

Census.		Specimens received.	Percentage of Specimens received.	Cases of Hookworm Disease.	Percentage of Hookworm Disease.
Europeans	11,900	6,461	54·3	149	2·3
Aborigines	706	525	74·4	159	30·3
	12,606	6,986	55·4	308	4·4

In a number of instances specimens of faeces could not be obtained from some of the white residents in districts where positive cases of hookworm were found. This lack of co-operation militated against as complete an investigation as was desirable.

During the campaign 126 districts were visited, including the towns, villages and settlements in twelve shires and eight municipalities, and recommendations from the Department for necessary remedial action to prevent further spread of the disease were forwarded to local authorities in these areas; or, in the case of public schools, to the Education Department.

The interest displayed by local authorities in rendering assistance was very helpful. In many instances the local health inspector participated in the campaign by accompanying the departmental officers during inspections. By this means unsatisfactory conditions were often rectified before this Department's recommendations had reached the local authority.

Public Baths and Swimming Pools.

To facilitate the preparation of an ordinance for supervision and control of public baths and swimming pools a routine inspection was begun during the year of all swimming pools in the State. The inspections have shown the need for such an ordinance, and are also creating a greater interest by local authorities in the proper administration of the baths in their districts.

The majority of pools are owned and controlled by councils, and for the most part the revenue does not cover the cost of maintenance and interest on outlay.

The water is usually taken from the town supply, and the periods of refill vary from 24 hours to 14 days. In some instances the water is chlorinated, but there appears to be a lack of knowledge in most places as to the correct methods to be adopted.

All the baths so far inspected are constructed of concrete and are situated in the open. The content is generally about 100,000 gallons.

About 50 per cent. of the baths are provided with first-aid outfits and life-buoys, and the attendants are mostly expert swimmers with a knowledge of life-saving methods and resuscitation.

At the baths visited very few accidents of any consequence have occurred during the past five years, and only one fatality. From inquiries made there appear to have been so far only a few instances where any ill effects from the use of the baths have come under notice.

Defects.—The cost of water usually forms a heavy financial charge, and this leads to water being retained for various prolonged periods, with or without purification or chlorination. Even where chlorination is undertaken, the lack of proper knowledge, as well as the incentive to economise, leads to indifferent methods being adopted. The cleansing of towels and costumes does not appear to be kept under responsible observation, and it appears to be doubtful whether the work is carried out satisfactorily.

Comprehensive reports on the separate swimming pools will be submitted when the inspection of all of them has been completed.

Camps and Camping Sites.

The motor-car has enabled many persons to visit areas well removed from railways and the ordinary beaten tracks, and to remain thereat for indefinite periods by "camping out," and as these camps are frequently situated at or near sources of water supply used for domestic and other purposes in towns, villages and settlements, which may be some distance away, the time has arrived for local authorities to be placed in a position to exercise control over these camps. With a view to the drafting of a suitable ordinance in this connection the Department began during the year an inspection of various camps to study closely the conditions which need to be provided for in any ordinance dealing with the subject.

Amongst the unsatisfactory conditions found at the camps inspected were—unsuitability of site; doubtful water supplies; inefficient means of dealing with nightsoil, sullage water, rubbish and manure; animals in too close proximity to tents; absence of washing and bathing facilities, and lack of control on the part of authorities concerned regarding lay-out of camps, &c. So far seventeen camps have been inspected, including four recreation camps in the Warringah Shire and Blackheath Municipality; and thirteen railway camps (Camurra to Croppa Creek, six; West Wyalong to Euglo, seven).

INSPECTION OF THEATRES AND PUBLIC HALLS.

During the year inspections were made of 144 public halls. It was found that much improvement in structural and general sanitation has been effected, and a more definite interest is displayed in regard to the comfort and convenience of patrons.

Convictions were obtained against two licensees for failing to keep buildings properly clean, but most of the premises visited were found to be satisfactory in this respect. Pulicides are now much more generally used.

Ventilation plants of two new theatres were tested and air tests made while the premises were in occupation.

Recommendations have been submitted for amendment of the Regulations under the Theatres and Public Halls Act.

BETTER FARMING TRAIN—"BETTER HEALTH" EXHIBIT.

When the Better Farming Train was inaugurated by the Agricultural Department, the Health Department was invited to co-operate by providing a section on rural sanitation and disease prevention.

A railway car was fitted up with appropriate models, such as garbage incinerators, systems of house drainage, septic tanks and filters, fly-proof window and door screens, &c., sleeping-out chalet, &c.

Charts and coloured posters were displayed about the car and instructive pamphlets dealing with flies and mosquitoes, treatment of snake bite, sunstroke and other rural and sanitary problems, and care of food, &c., were freely distributed.

Between March, 1927, and November, 1928, the "Better Farming" Train called at 152 towns, remaining at the larger centres for two days and at the smaller ones for one day; the train was open for inspection for 183 days. During its tour 8,290 miles were covered, and it is estimated the train was visited by 350,000 persons. Many of the visitors travelled 60 miles for the purpose of inspecting the exhibits, &c.

At many of the principal centres the local authorities co-operated in making the Health exhibit widely known, and to judge by the commendatory remarks made by those attending the exhibition it was thoroughly appreciated.

Parties of visitors were conducted through the car by the departmental officer in charge and explanations given as to the construction and use of the different exhibits. Lectures were given either in the car itself or in the open air. At several places, always by request, lectures were delivered to school pupils, and no more interested audiences were obtained than those furnished by the children.

The Department has every reason to be satisfied with the result of the efforts made in this field There is no doubt that through the activities of the train it was possible to reach a very wide circle of persons greatly in need of advice and instruction, with whom it would not otherwise have been possible to get into contact.

PRIVATE HOSPITALS ACT, 1908.

Report on the operation of the Act for the year ended 31st December, 1928, by F. M. SUCKLING, M.B. Ch.M., D.P.H. (Sydney), D.T.M. & H. (Cambridge), Assistant Medical Officer of Health.

At the close of the year there were 664 licensed hospitals in the State, showing an increase of 55 compared with the year ended 1927.

Of these 664 hospitals, 288 are included in the Sydney District (increase for the year of 23), the remainder, 376 (increase for the year of 32) being situated in the country districts.

Inspection of Private Hospitals.—Inspections have been carried out both in the metropolitan and country districts on lines similar to those indicated in former reports. It is anticipated, however, that during the forthcoming year more regular and frequent inspections of private hospitals will be possible with the appointment of a staff of nurse inspectors for such duties.

It was ascertained that matters which called for attention related chiefly to difficulties in drainage of yards, and to the fact that many resident managers failed to keep their registers entered up to date; and that, contrary to regulation, there was in many cases a disposition to re-arrange accommodation without first seeking the approval of the Board of Health.

Community Activities in connection with Private Hospitals.—It is gratifying to note that the Bush Nursing and Country Women's Associations still continue the good work of providing for the establishment of small hospitals in the remoter parts of the State.

At the close of the year the Bush Nursing Association was responsible for licensed hospitals at Ebor, Erigolia, Finley, Ivanhoe, Jindabyne, Kentucky, Nimmitabel, Pilliga, Reid's Flat, Tumbarumba, Ungarie, and Urbenville, and others were to be licensed at an early date at Bonalbo and Dalgety. An exempted hospital at Mount Hope is also under the management of a bush nurse.

The Country Women's Association was responsible for hospitals at Gulargambone and Hillston and similar hospitals were being contemplated for Tottenham and Yenda.

Exemptions.—Only two hospitals held exemptions under the Act during the year, viz., that at Mount Hope and one at Wilcannia, but the latter was discontinued towards the close of the year.

Notifiable Diseases under the Act.

(*a*) *Scarlet Fever.*—Two cases of this disease occurred in a private hospital at Forbes, licensed for medical, surgical and lying-in cases. The doctor in attendance reported that an obstetric case was responsible for the introduction of the complaint. Consequent on the diagnosis being made this patient was removed to the District Hospital. Later the resident manager of the hospital contracted the disease and was likewise removed. The Department prohibited the reception of new patients into the private hospital in question until fourteen days had elapsed from the removal of the last scarlet fever patient and subsequent disinfection of the premises. No further cases occurred after this lapse of time, and the hospital was accordingly reopened with a temporary staff to carry on the nursing duties of the institution during the absence of the resident manager.

(*b*) *Sepsis connected with Pregnancy in Private Hospitals.*—Ten cases were reported during the year of which two were notified at different periods from one hospital situated in the metropolitan district, the remaining eight being single cases from eight individual country hospitals, viz., Bungendore, Nyngan, Maclean, West Maitland, Forbes, Canowindra, Denman, and Macksville. Of the nine hospitals involved four were licensed for the reception of lying-in cases only and five were licensed for medical, surgical and lying-in cases.

The two cases occurring in the metropolitan area were made the subject of personal departmental inquiry. They occurred several months apart and there appeared to be no casual connection between them.

In my report for the year 1927 I expressed the opinion that the number of cases notified from the private hospitals did not accurately represent the total number of cases of puerperal sepsis, and put forth certain reasons which might be held responsible for the discrepancy, *e.g.*, ignorance of the regulations governing such cases, and apparent hesitancy in coming to a conclusion whether a case was to be considered one of notifiable puerperal sepsis or otherwise.

I am of the opinion that some of the difficulties appertaining to this matter may be minimised in the near future, in view of certain action about to be adopted, viz.,—

(*a*) The appointment of a staff of nurse inspectors which will mean closer and more regular supervision of private hospitals. Resident managers also will be carefully instructed in their duties as to the observance of regulations, both under the Private Hospitals Act and Nurses Registration Act.

(*b*) The gazettal of a new regulation under the Nurses' Registration Act dealing with the notification of puerperal pyrexia, which is as follows:—

> Every midwifery nurse shall immediately report to the Board in writing if she is in attendance on a case of puerperal pyrexia, and shall forthwith take all reasonable precautions to provide against the spread of possible infection, until she obtains advice from a medical practitioner

that the patient's condition is not due to infection of puerperal origin. If, however, the patient's condition is due to such infection, the midwifery nurse shall forthwith notify the Board accordingly, and she shall not attend any other pregnant or lying-in woman until she produces to the Board a certificate from a legally qualified medical practitioner that she is not liable to convey infection, and has received the written permission of the Board to resume practice.

> For the purposes of this regulation puerperal pyrexia is defined as any febrile condition occurring in a woman from the end of the first to the end of the tenth day after abortion, miscarriage, or childbirth, in which a temperature of 100·4 F. (38 C.) or higher occurs upon more than one day during that period.

Due investigation will be made of cases so notified, and if ascertained to be due to infection of puerperal origin, those in private hospitals must then be accordingly duly notified and dealt with in accordance with regulations 16 and 20 of the Private Hospitals Act, which are as follows :

> 16. The manager of any private hospital licensed for lying-in purposes shall, whenever a patient is found or is reasonably suspected to be suffering from any disease duly proclaimed for the purposes of the Private Hospitals Act, 1908, give notice to the Secretary to the Board of Health by registered post or by personal delivery in Form 14.
>
> 20. Whenever a case of puerperal fever (including all puerperal conditions depending on infection) occurs at or is admitted to a private hospital, no new lying-in patient shall be admitted until permission is given by the President of the Board of Health.

Additional help may also be expected in connection with this matter should puerperal infection be made a notifiable disease by medical practitioners under the Public Health Act, as is now under consideration.

Question of Proximity of Private Hospitals to Private Dwellings.

The Private Hospitals Act does not deal specifically with the site of a private hospital, but only requires approval of the house and annexed buildings, so that the question of proximity to other dwellings in the event of trouble arising, becomes one for civil action if any between the respective parties. In actual practice it has been often found that possible friction has been and may be avoided by the inspecting departmental officer making suggestions as to re-arrangement of rooms in the proposed hospital, or by advising the relinquishment of the premises concerned in favour of a dwelling in less close proximity to others. This latter condition can of course only be achieved in the less crowded suburbs.

However, in view of a particular instance of this difficulty which occurred during the year the Board sought the opinion of the Crown Solicitor as to its powers in the matter, the circumstances of which were as follows :—

> The case in which this question arises is in connection with applications by Nurses C. and W. These two nurses have, until recently, been joint licensees of premises known as F. They have decided, owing to the extension of their business, to have two separate licenses, and premises next door but one to the existing hospital have been rented for the purpose of using them as a maternity private hospital. Nurse W., who is a registered general nurse, has therefore made application to be licensee and resident manager of the existing private hospital—in place of joint licensee with Nurse C. Nurse C., who is a registered general and midwifery nurse, wishes to become the licensee and resident manager of the other premises now desired to be licensed.
>
> The owner and occupant of the intervening premises has heard of the proposal and has protested to the Board of Health against licensing of such premises on the ground that owing to proximity of his residence the hospital would cause him annoyance for the reasons stated in his communication.
>
> This matter was placed before the Board of Health at a previous meeting, but before coming to a decision it desired to be furnished with an advising as to whether it has any legal right to—
>
> (*a*) Refuse to recommend that the premises be licensed, or
>
> (*b*) Refuse to approve of Nurse C. as resident manager.

The Crown Solicitor gave the opinion that, on the understanding that there is no objection to the house or the character, fitness and qualifications of the applicant, the applicant, Nurse C., was entitled to have the premises licensed and herself approved as resident manager, although it was pointed out that it was a serious matter for the complainant to have a private hospital on each side of his property.

Comments on Tables I and II.

Table I.—As indicated in this table, lying-in hospitals still constitute the greatest proportion of those licensed, being 56 per cent. of the total. This proportion is 2 per cent. less than that of last year. On the other hand the proportion of licensed medical, surgical and lying-in hospitals is slightly higher, showing an increase of 2 per cent. on that of the previous year.

Table II.—The number of hospitals containing from four to ten beds still continues to comprise the largest proportion of licensed premises, being 46 per cent. of the total—the percentage being the same as that of the previous year.

In the great majority of private hospitals the licensee and approved resident manager were one and the same person, the exceptions being 56 (Sydney District, 16; country, 40).

Ten medical practitioners held the position of approved resident manager (Sydney district, 2; country, 8).

TABLE I.—Showing the Classification of Private Hospitals Licensed at 31st December, 1928, according to Nature of Cases received and the total number of beds provided by each class of hospital.

	Medical, Surgical, and Lying-in.		Medical and Surgical only.		Lying-in.		Total.	
	No. of hospitals.	No of beds.	No. of hospitals.	No. of beds.	No. of hospitals.	No. of beds.	No. of hospitals.	No. of beds.
Sydney District............	88	1,880	36	671	164	695	288	3,246
Country Districts	147	1,374	18	346	211	858	376	2,578
Total...............	235	3,254	54	1.017	375	1,553	664	5,824

TABLE II.—Showing Classification of Private Hospitals with respect to size as signified by Number of Beds available.

	1	2	3	4–5	6–10	11–20	Over 20.	Total.
Sydney District	15	31	36	55	64	47	40	288
Country Districts	17	41	67	71	119	50	11	376
Total	32	72	103	126	183	97	51	664

MEDICO-LEGAL SECTION, &c.; HOSPITAL ADMISSION DEPOT.

REPORT OF THE GOVERNMENT MEDICAL OFFICER FOR SYDNEY FOR THE YEAR ENDED 31st DECEMBER, 1928.

Medical Staff.

Dr. Arthur Palmer, Government Medical Officer for Sydney; Dr. A. E. Gibbes, Second Government Medical Officer for Sydney; Dr. R. M. Mackay, Third Government Medical Officer, Sydney; Dr. Frederick Tooth, Medical Officer.

Depot Staff.

One Senior Attendant, one Junior Attendant, one Escort Attendant.

Sir,

I have the honor to present herewith a brief review of the work carried out by Dr. Tooth and myself during 1928. Drs. Gibbes and Mackay are still engaged on work under the Workers' Compensation Act.

Medical Work at Hospital Admission Depot.

Examination of Indigent Sick Persons.—The Government Medical Officers attend at the Hospital Admission Depot every morning from 9 a.m. to 12.30 p.m. to examine indigent sick persons seeking admission to the various hospitals and institutions. During 1928 19,186, compared with 18,115 persons in 1927 were sent to the State Hospitals and Homes, or to one or other of the Metropolitan hospitals or convalescent homes. The sick poor who are unable to attend at the depot are seen at their homes, and arrangements made for their transfer to a suitable institution.

Medical Examinations for Public Services, &c.

Examinations for the Public Service Board.—The Hospital Admission Depot is utilised for the examination of some of the candidates for admission to the Public Service, and there were 474 examinees under this heading during the year (302 in 1927). Other examinations of public servants were in cases of applications for retirement before 60 years through physical incapacity or other medical reasons, and their re-examination each year; or to ascertain the fitness of officers to continue on duty between the age of 60 and 65 years. Special medical examinations are also occasionally required in connection with other Service matters.

Medical Examinations of Police Staff.—969 persons applying for admission to the police force were examined during the year, and 209 probationary constables were re-examined on completion of twelve months' service. Candidates for appointment to this important service are first examined at the Hospital Admission Depot, and after twelve months' service are re-examined at the office of the Inspector-General of Police. At my rooms in the Police Department members of the police force on the sick list are seen daily, and other matters arising in connection with this service are attended to. During 1928 there was an average daily number of 59 police on sick report as compared with 46 for 1926.

Other Public Services.—Other work for public services included the examination of pilots for the Navigation Department.

Vaccinations.—846 persons were vaccinated at the Hospital Admission Depot compared with 438 in 1927; most of these were members of the police force.

Medical Examinations required by the Factories Act are also made by the Government Medical Officers; there were 6,955 such examinations in 1928—an increase of 2,273 on the figures for 1927 (4,682).

Medico-legal Work.

Cases of Alleged Rape and Criminal Assault.—In these cases it is desirable that the persons concerned should be examined with the least possible lapse of time, and urgent calls by the police are frequent at all hours of the day and night in connection with such charges. During 1928, 81 persons were examined in connection with such cases, and there were 70 examinations of clothes and other exhibits in criminal cases.

Suicides, Murders, and Violent or Uncertified Deaths are medico-legal matters which require immediate attention by this Branch. The work for the Coroner's Court in 1928 in connection with such cases comprised the external examination of 216 dead bodies, the making of 100 internal post-mortem examinations, and the giving of evidence at 145 inquests. In several instances evidence was subsequently given at the Central Criminal Court.

In connection with medico-legal cases, all exhibits of clothing, implements, &c., in cases of murder, rape and assault are submitted to this Branch before being sent on to the Microbiological or Chemical Laboratories for examination.

Medical Examination of Accused Persons.—A number of examinations were made of accused persons under the arrangement by which persons charged with capital or other serious offences are medically examined as soon as possible after arrest.

Examinations had also occasionally to be made to ascertain the fitness of prisoners to travel to Long Bay.

Lunacy Cases.—The Reception House at Darlinghurst was visited daily throughout the year for the purpose of examining persons under detention there, and 954 persons (519 males and 435 females) were certified as insane.

The medical officers attached to this Branch are on duty at all hours, and are liable to be called upon at any time by any court of law or department of the State Government for work requiring general medical knowledge.

Workers' Compensation Commission and Government Insurance Office.—Two medical officers attached to this Branch (Dr. A. E. Gibbes and Dr. R. M. Mackay) have been carrying out duties during the past two years for these two activities, Dr. Gibbes for the Government Insurance Office and Dr. Mackay for the Workers' Compensation Commission. Reports on the work of these officers are not included in this Report.

ARTHUR A. PALMER,
Government Medical Officer for Sydney.

SECTION I.—B.

DIVISION OF MATERNAL AND BABY WELFARE.

Annual Report of the Director (Dr. E. Sydney Morris) for 1928.

PART I.—MATERNAL WELFARE.

Whilst lack of space does not permit a discussion of the statistics of maternal mortality, and though it is not desired to traverse this question, which was dealt with fully in my last annual report, it is necessary to point out that the maternal mortality rate in New South Wales is estimated extremely accurately. It cannot, therefore, fairly be compared with the statistics of many countries whose basis of compilation may neither coincide with nor be as comprehensive as our own.

The Government Statistician makes every endeavour to ascertain from the certifying medica practitioner the exact cause of death in cases in which there is any possibility of a puerperal relationship The cumulative effect of this investigation has been in continuous operation since 1893, and whilst it has, no doubt, produced greater accuracy in classification and in the total number of deaths recorded, it has also tended to increase materially the maternal mortality rate of New South Wales compared with that of countries which do not carry out such an investigation. It is assuredly this investigation which is the underlying cause of the marked increase in the maternal mortality rate which can be seen in the Graph No. 1, for the years subsequent to 1893.

Where comparison with the maternal and neo-natal death rate of other States and countries is made it is always necessary to make sure whether the two rates are strictly comparable. It is, of course, only with such other countries in which an exactly equivalent classification holds good that just comparison can be made.

Graph No. 1 shows the annual death rate of women from child-birth and from septicaemia per 1,000 births. While deploring the fact that this rate remains high showing that there is still a vast unexplored field of inquiry and effort which has yet to be opened up (in this as in most other civilised countries where the same problem remains unsolved) it is, nevertheless, encouraging to find that the maternal mortality rate for 1928 shows a slight drop in the general downward trend. It will be seen from this graph and also numerically in Table 1, that although rises in individual years may take place, the New South Wales maternal mortality rate as a whole is gradually declining, and this in spite of the fact that illegal operations (classified in other countries, in accordance with the International Classification of Causes of Death, as homicide and not as maternal mortality) are, in New South Wales included among maternal deaths. The alarming increase in recent years in the deaths from these operations (and therefore presumably in the number of such operations performed) is dramatically shown in Graph No. 2 although actually the figures for 1928 show a considerable improvement on those of the preceding year.

TABLE I.

Year.	Total Births.	Total Puerperal Deaths.	Deaths from Illegal Operations.	Percentage of Total Deaths caused by Illegal Operations.	Maternal Mortality Rate, excluding Illegal Operations.	Ratio.*
1904	38,667	305	...	...	7·9	100
1905	39,501	279	13	4·6	6·7	
1906	40,048	277	17	6·1	6·4	
1907	42,195	263	7	2·6	6·0	
1908	42,525	304	15	4·9	6·7	
1909	43,769	252	8	3·1	5·5	83
1910	45,533	261	8	3·0	5·5	
1911	47,677	279	12	4·3	5·6	
1912	51,993	305	16	5·2	5·5	
1913	52,134	329	10	3·0	6·1	
1914	53,615	296	9	3·0	5·3	77
1915	52,885	272	8	3·0	4·9	
1916	52,575	297	16	5·3	5·3	
1917	52,467	327	22	6·7	5·8	
1918	50,700	267	15	5·6	4·9	
1919	48,528	263	17	6·4	5·0	70
1920	53,974	331	27	8·1	5·6	
1921	54,634	281	33	11·7	4·5	
1922	55,214	279	32	11·4	4·4	
1923	54,112	283	33	11·6	4·6	
1924	53,670	291	32	11·0	4·8	73
1925	54,615	325	40	12·3	5·2	
1926	53,126	276	40	14·5	4·4	
1927	53,858	352	46	13·0	5·6	
1928	54,800	327	32	9·7	5·4	

* Per cent. ratio of quinquennial averages to average of 1903–7, which is taken as 100.

In the following table, No. 2, the various causes of maternal mortality for the years 1927 and 1928 are tabulated :—

TABLE II.

CAUSES OF MATERNAL MORTALITY.

Causes.	1927.		1928.	
	Married.	Single.	Married.	Single.
Accidents of pregnancy	40	...	28	4
Illegal operations	28	18	20	12
Puerperal hæmorrhage	31	3	47	2
Other accidents of childbirth	26	2	19	...
Puerperal septicæmia	96	7	57 } 93	6 } 9
Puerperal septicaemia following abortion miscarriage	...	...	36	3
Puerperal phlegmasia (alba dolens) Embolism (sudden death)	24	...	24	1
Puerperal albuminuria and convulsions	67	3	65	2
Following childbirth (unspecified)	5	...	...	1
Puerperal diseases of the breast	2	...	...	...
Total	319	33	296	31

Accidents of pregnancy and illegal operations are two groups of causes of maternal mortality over which there appears to be little control. Interference with pregnancy whether with criminal intent or by deliberate meddling on the part of the expectant mother herself is apparently becoming more frequent. Undoubtedly a certain number of abortions or miscarriages are induced on justifiable medical grounds for the safeguarding of the mother's life. It is, however, highly improbable (considering the increase in knowledge of the causes and therefore of the prevention of many of the conditions leading to miscarriage) that the persistently high figures indicating the number of " accidents of pregnancy " can denote only unavoidable occurrences.

The preponderance of married women among the deaths due to illegal operations is, in my opinion, a most disquieting sign. These deaths are recorded as the result of coroners' inquests and probably represent only a small proportion of the total cases in which unjustifiable interference with pregnancy occurred. Whilst the tendency to this drastic means of escape from motherhood in the case of the single woman can be appreciated, one cannot readily visualise such extenuating circumstances that would justify a married woman in employing this dangerous practice.

It should be noted also that more than one third of the deaths from puerperal septicaemia occur subsequent to abortion and miscarriage. There is every reason to believe that many of these abortions and miscarriages are brought about by interference, though not in such a manner as to warrant an inquest.

The Administrative Control of Maternal Mortality.—The aim and objective of the Division of Maternal and Baby Welfare are far from fulfilment. Ultimately they are a question of money. The financial position has become more difficult in each successive year and at present all progressive schemes have, necessarily, to be held in abeyance. Furthermore, the reduction of maternal mortality is not within the scope of any one body or Department and can only be achieved through the harmonious co-operation of all the responsible authorities.

The increased amount of training in obstetrics given to medical students by the University and the continual tightening up of the Regulations of the Nurses' Registration Board with regard to the practice of midwives will, in time, have a very beneficial effect on the standard of obstetrics in New South Wales.

Notification of Puerperal Pyrexia.—Up till the end of 1928, the necessary Regulations, under the Nurses' Registration Act had not been put into operation. At present the notification by a midwife of any case of puerperal pyrexia occurring in her practice is compulsory. Puerperal pyrexia, for the purposes of this regulation is defined as " any febrile condition occurring in a woman from the end of the first to the end of the tenth day after abortion, miscarriage, or child-birth, in which a temperature of 100·4 F. or higher, occurs on more than one day during that period."

The passing of this regulation marks a definite step forward as, after notifying such a case, the midwife must not attend any other pregnant or lying-in woman unless she satisfies the Board that the pyrexia is definitely not due to infection of puerperal origin. If, on the other hand, it is due to puerperal infection, she is suspended from practice until given written permission by the Board to resume. Each case of puerperal pyrexia notified to the Nurses' Registration Board is personally investigated by a member of the medical staff of this Department.

It is felt very keenly, however, that—important though this notification of puerperal pyrexia is—it is incomplete without a proclamation under the Public Health Act making puerperal infection notifiable by medical practitioners.

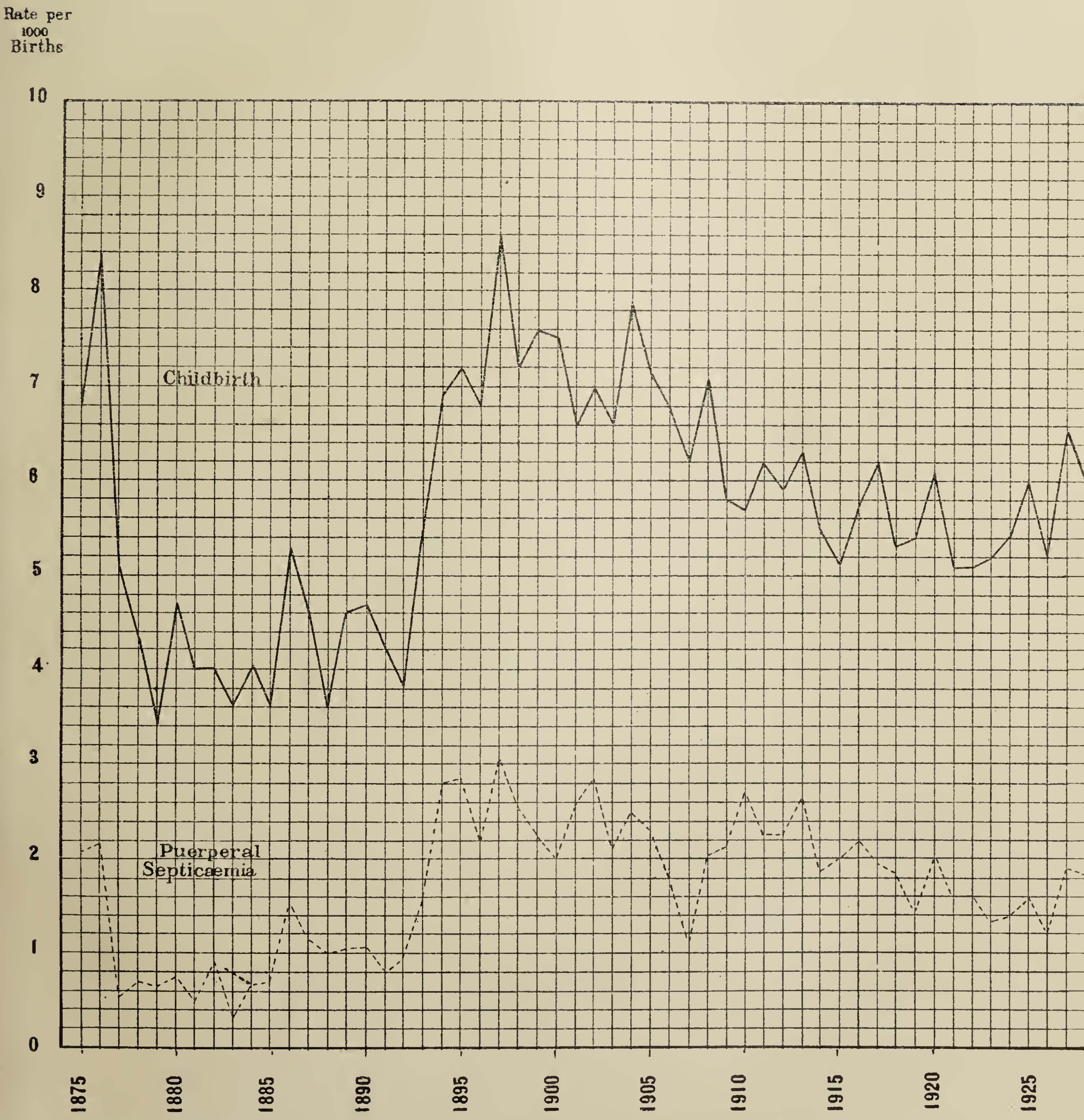
Pre-Natal Care.—Pre-natal care plays an increasingly important part in the reduction of maternal mortality and morbidity and also of neo-natal mortality. Progress in this direction is necessarily slow, owing more to indifference and failure to grasp its importance, it would seem, than to actual opposition, at any rate on the part of the expectant mother herself. At the time of writing, a small experiment which, it is hoped, will be the precursor of much larger efforts, has been made in the form of an ante-natal clinic in connection with one of the Metropolitan Baby Health Centres. This clinic is not intended in any way to be in opposition to any of the clinics connected with the large maternity hospitals, nor is it intended to come between the patient and her doctor or midwife. It is intended to keep in touch with the latter, reporting from time to time the patient's progress, and referring her at once to her doctor for treatment if any untoward symptoms appear.

GRAPH No. 1.

CHILDBIRTH AND PUERPERAL SEPTICÆMIA.

ANNUAL DEATH RATE OF WOMEN PER 1,000 BIRTHS IN NEW SOUTH WALES,

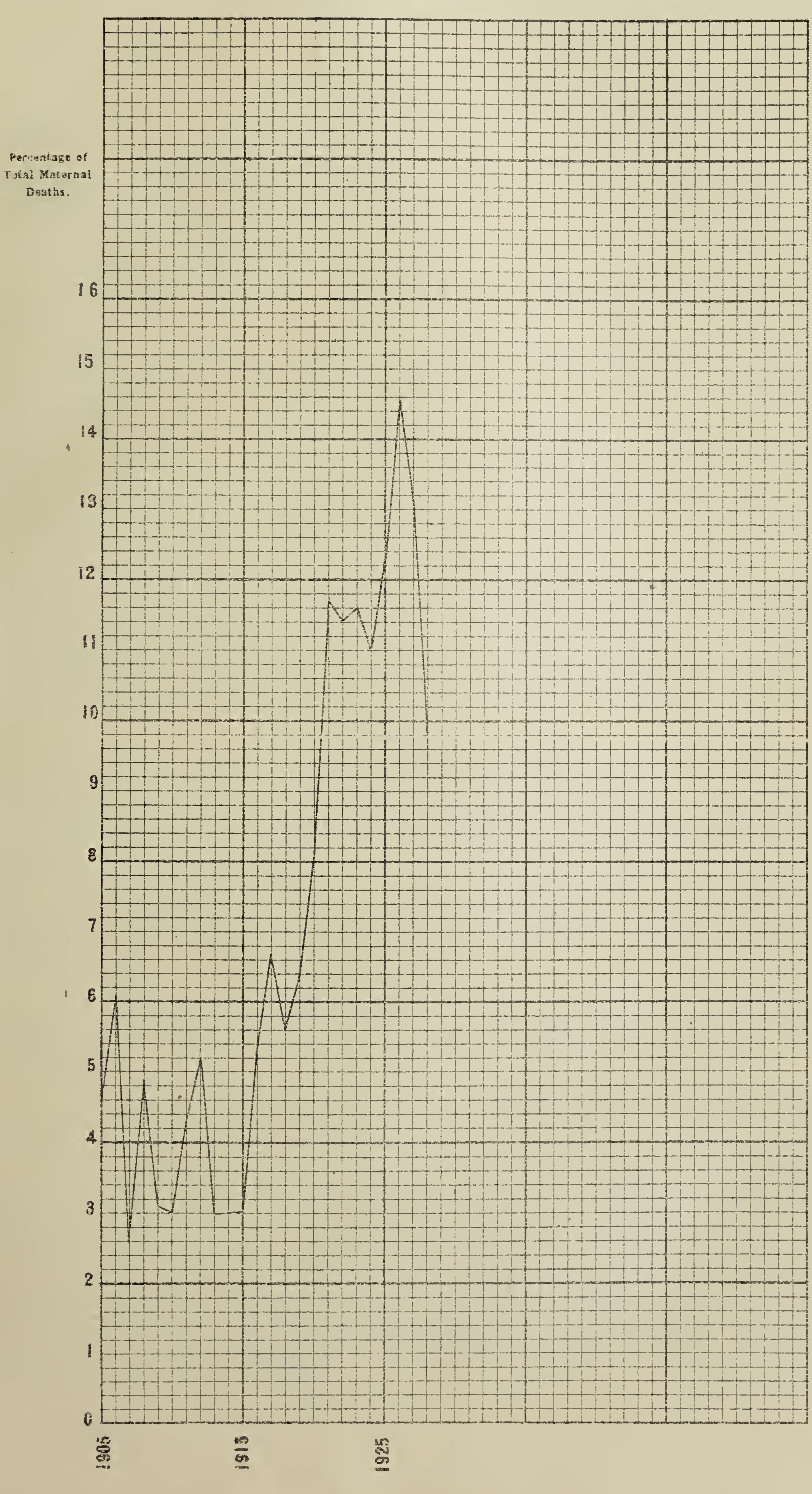
1875-1928.



Note.—Since 1905 deaths from "illegal operations" are included in total deaths in childbirth.

GRAPH No. 2.

MATERNAL MORTALITY.
DEATHS FROM ILLEGAL OPERATIONS.



Such contacts as these should prove valuable from all points of view and such supervision should be of great help to busy practitioners. It is confidently hoped that the number of clinics, and the attendances thereat, will grow rapidly since many expectant mothers already attend the Baby Health Centres for general pre-natal advice. Unfortunately such attendances by expectant mothers are generally late in pregnancy and are in many instances only associated in the mother's mind with the desire to obtain patterns for baby's clothes or for definite information regarding the necessary preparations for breast feeding. Nevertheless, it is felt that such visits, of which 4,355 were paid last year are the beginning out of which an effective pre-natal scheme will be evolved.

It has not been possible to obtain complete statistics of the pre-natal work carried out by the various public maternity hospitals. It is probable that some 10,000 women receive pre-natal care to some extent in the clinics controlled by these hospitals. The disconcerting point is that these women attend on an average less than twice, which is far below the requirements for adequate care and supervision.

Education of the Public.—Thousands of leaflets dealing with the expectant mother have been issued, apart from other literature dealing indirectly with maternal welfare, but directed especially towards the welfare of infants. Letters are received daily from all over the State, and even from other States of the Commonwealth, asking for advice on some aspect of maternal welfare.

To reduce maternal mortality the public must be reached, and many lines of approach will have to be followed in order to change the general viewpoint.

The average woman is indifferent to the necessity for care and supervision during pregnancy, and yet with the routine examination of the urine alone during pregnancy a great many catastrophes and deaths could be avoided.

Pre-natal supervision can do much to reduce mortality by the early treatment of difficulties such as haemorrhage, by the detection and rectification of mal-presentations and the recognition of any condition likely to lead to delayed or difficult labour. Systematic pre-natal supervision will reduce the complications of parturition, but it will not reduce maternal mortality to vanishing point. Certain factors require much further research before we are in a position to adopt means for their control. Public interest has been awakened, and though it will take some years, perhaps, before the majority of women will be seized with the necessity for safeguarding their health, the ultimate spread of this knowledge is assured. To this end numerous lectures have been given, films have been shown throughout the State, school girls are being instructed in the care of infants, so that they will be prepared for guidance, particularly in regard to their own health at a later date, and in general, every avenue is being exploited to arouse public interest and effect an improvement of the present position.

Research.—When a complete staff for the work is available it is proposed to investigate every maternal death and the death of every child in the first month of life, as a means of discovering the actual factors involved in each particular case. Beyond this, however, detailed research is required to elucidate for instance cases of septicaemia where labour has been spontaneous with no traceable interference by doctor, midwife, or other attendant. That there is some factor at present not fully known is quite evident, for septic infection not infrequently occurs in cases in which the child has been born before the arrival either of the doctor or the midwife, and in others in which no internal examination has been made. The elucidation of these and similar problems will require a considerable amount of laboratory and field investigation.

PART 2.—INFANT WELFARE.

The infant mortality rate in New South Wales has, for the past quarter of a century, gradually decreased year by year (see graph 3). When one compares individual years, it is seen that the fall is not uniform, though the general decline is quite evident. The rate for 1928 (54·82) whilst very little lower than that of 1927 (54·9), represents the maintenance of the downward trend. It is fully realised that this rate, which means that some 3,000 babies are lost during their first year, is much higher than it should be, and is certainly capable of being reduced.

Though no one cause alone can account for the infant mortality rate, nor one remedy alone cause a fall thereof, it is felt that the Baby Health Centres, spreading the gospel of mothercraft and teaching mothers how much sickness is avoidable, must have a beneficial effect on the health of infants and must be to a great extent responsible for the steady lowering of the death-rate—especially from such preventible diseases as summer diarrhoea.

Such being the case, it is greatly to be deplored that financial stringency has prevented the extension of the work of the Baby Health Centres to many country towns which are urgently in need of Centres and where the building and equipment have already been provided by the local branches of the Country Women's Association.

At the time of writing some twenty such centres are awaiting the appointment of nurses.

Nevertheless, during the year two new metropolitan Centres (Ryde and Lane Cove) were opened and 7 country ones (Yass, Cootamundra, Albury, Moree, Tamworth, Wollongong and Singleton) making 76 Centres altogether; 38 in Sydney and suburbs and 38 in country towns.

The nurses associated with the Baby Health Centres are all general trained nurses, most of them also have their obstetric certificates, and all, in addition, receive a special mothercraft training at the "Tresillian" Mothercraft Training School. 115 of these nurses were employed in the Centres on 31st December, 1928. The closest co-operation is observed between the Royal Society for the Welfare of Mothers and Babies (the constituted authority in control of "Tresillian") and the Department of Public Health.

Not only is "Tresillian" the training school for our nursing staff but it supplements in a most effective way the activities and efforts of the Baby Health Centres. Babies from the Centres who need their feeding specially supervised, premature babies, and mal-nourished babies are admitted to "Tresillian" with their mothers who, in this way, receive intensive instruction during their period of residence.

Advice at all Baby Health Centres is free, and all mothers, regardless of financial position or social standing, are encouraged to attend there.

During 1928 the total attendances of babies at the Health Centres numbered 309,117—an increase of over 54,000 more than in 1927. The number of individual babies attending was 30,310. Though these results are very gratifying, the fact remains that there are still some 30 per cent. of babies who are never brought near a Centre. Many of them, of course, live out of range of them, but many more are in the city where Centres are numerous and it is, unfortunately, this group which is responsible for the greater part of our preventible mortality.

Every effort is made to attract these refractory mothers to the Centres. As soon as a birth is registered with the local authority, notice of that birth is supplied, in the city and suburbs and in the towns which have Health Centres, to the Nurse-in-Charge, who thereupon calls on the mother with offers of help and an invitation to her to attend the Centre with her baby as soon as she is able.

This visiting is a large part of the nurses' work, as will be seen by the fact that 24,804 new-born babies in New South Wales (almost half the total number of babies born in the State) were visited by the nurses in this way within a week or two of birth. In many cases several visits were paid, perhaps on account of the mother's inability to visit the Centre, or in order to encourage her to do so, or, again to teach the mother how to carry out, in her own home, the advice already given her at the Centre. In this way 73,204 subsequent visits to homes (exclusive to those paid to expectant mothers, which will be referred to later) were made during the year.

In response to the nurses' invitations, 15,617 new-born babies became attendants at the Centres, while 8,572 other new babies were enrolled, making 24,189 new enrolments for the year. The carry-over of babies from the previous year brought the total, as previously mentioned, to 30,310 individual babies.

The Centres have each an honorary medical officer, who attends once a week and to whom difficult or unusual cases are referred. It is necessary to emphasise the fact that no sick babies are treated, such babies are referred to their own private doctors or to one or other of the children's hospitals for treatment.

The increasing favour with which the Centres are coming to be regarded by the general practitioners is shown by the number of babies who are sent by them for weighing, test feeds, and the general instruction of their mothers.

The chief aim and object of the Centres is to encourage and to help to establish the breast-feeding of all babies. Artificial feeding is only advised when it is found, after test-weighing and following out all the proper treatment, that it is necessary to complement the breast milk. The aim is to have the great majority of babies fully breast-fed till about 9 months old, without any trouble. A certain number experience some difficulty or, in some cases even fail altogether—owing to irregularity of attendance, failure to carry out instructions, opposition on the part of family and friends, and so on.

Uniformity of advice is the practice of all Centres. Where complementary or full artificial feeding is necessary, a definite method of modifying milk (fresh where possible, otherwise dried) is adopted. Patent foods are never used and any other system of feeding is only allowed under special medical advice. The fact that all the nurses have received the same mothercraft training and are all officers of one Department ensures this uniformity. In consequence a mother moving from one district to another in New South Wales where there is a Baby Health Centre is certain of being able to continue her baby's feeding and general care along exactly the same lines.

Further, co-operation between the medical and nursing staffs of the Centres is brought about by the regular meetings for discussion of various subjects. Papers are read by various medical officers and are followed by questions and the exchange of ideas. Any particularly interesting cases are reported, and any changes of policy or conduct announced and discussed. In this way all the members of the staff are kept in close touch with the advances in medical science and avoid the risk of becoming out-of-date in their work.

Though the death-rate among infants generally in the first year of life is showing a gradual decrease, the number of neo-natal deaths (as in most other countries, even those such as New Zealand, which have succeeded in lowering the general infant mortality rate) remains obstinately high, and this problem will remain unsolved until the high rate of maternal mortality is overcome.

One is fully conscious that herein lies a great field for research and inquiry. Circumstances, at present, do not permit this Department dealing with this matter in anything like a comprehensive manner, but, meanwhile, at the time of writing a very full history is taken from the doctor, nurse and parents of such infants, in the hope that some clue will be found showing along what lines a full investigation can be carried out and in what way matters can be improved.

As the welfare of the infant is so intimately bound up in the welfare of the mother, every effort is made to impress on the public that fact that expectant, as well as actual, mothers are welcomed at the Baby Health Centres.

That there is great scope for such service is indicated by the fact that 3,198 mothers came to the nurses for advice in 1928. Unfortunately, most of them came for patterns of clothes, and similar assistance rather than for advice concerning their own health, urine-tests, and other essentials. One feels, however, by the number of these visits, that the ground has been broken and the way paved for proper pre-natal clinics in connection with the Centres.

As regards pre-natal care and supervision generally, one feels that only, probably, somewhere about 20 per cent. of expectant mothers are provided for. It is difficult to ascertain the exact figures of the attendance at the various pre-natal clinics attached to the public maternity hospitals, although every effort has been made. It would appear that many of them do not keep complete records, whilst others classify the cases in such ways that they are not comparable with other clinics.

Everyone associated with such clinics is agreed, however, that it is extraordinarily difficult to persuade expectant mothers to attend, and even more difficult to get them to continue attending regularly. The general experience is that twice is the average number of times a mother will attend the clinic. Until this resistance can be overcome, one realises that difficult and abnormal labours will not be reduced.

It is believed that clinics at Baby Health Centres may appeal where similar clinics at hospitals do not, and this is one reason why the establishment of the former type is felt to be a necessity.

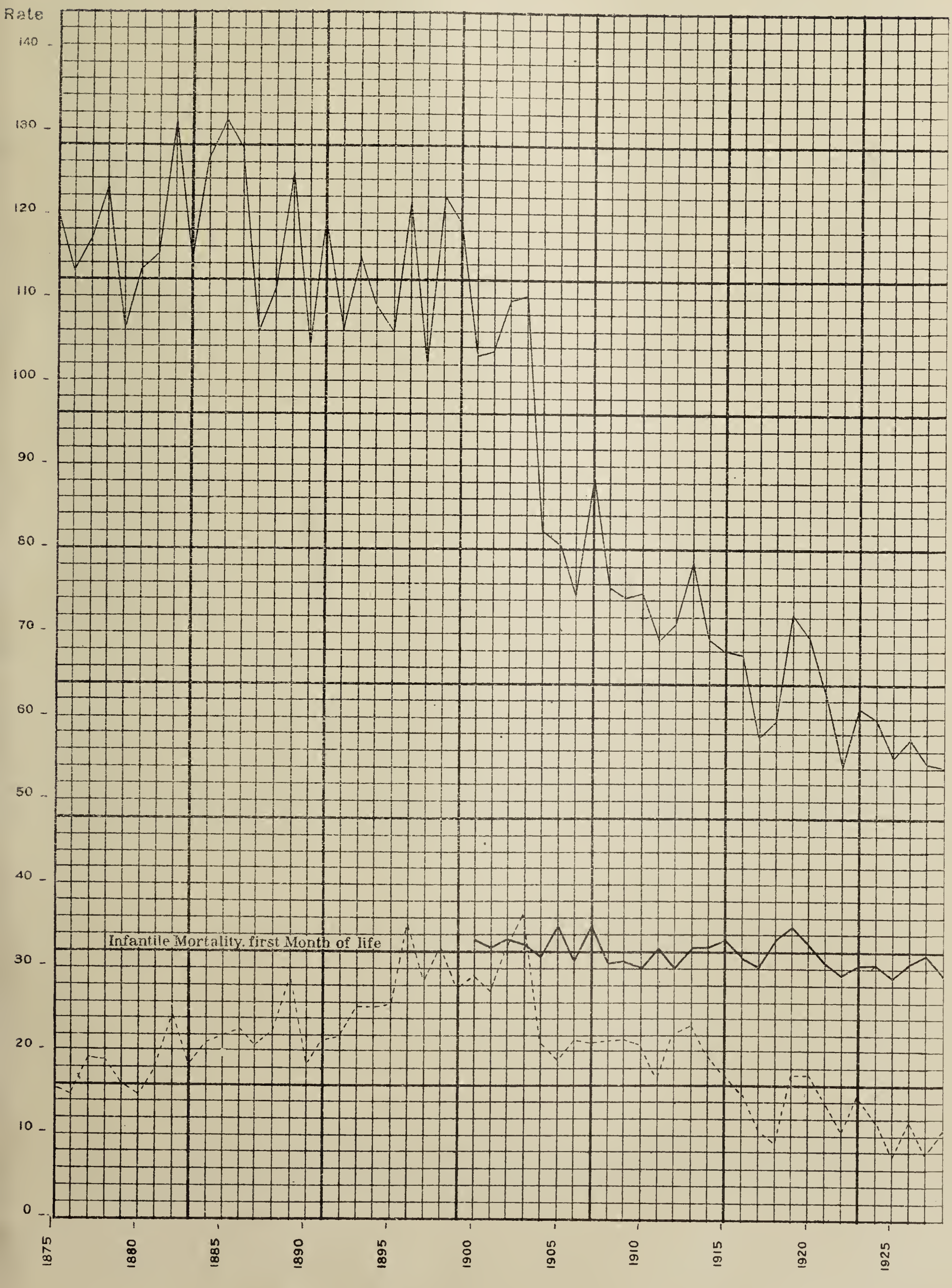
GRAPH No. 3.

INFANTILE MORTALITY IN NEW SOUTH WALES, 1875-1928.

Annual Death Rate of Children under 1 Year, per 1,000 Births ————————

Deaths from Diarrhœa and Enteritis of Children under 1 Year, per 1,000 Births - - - - - - - - -

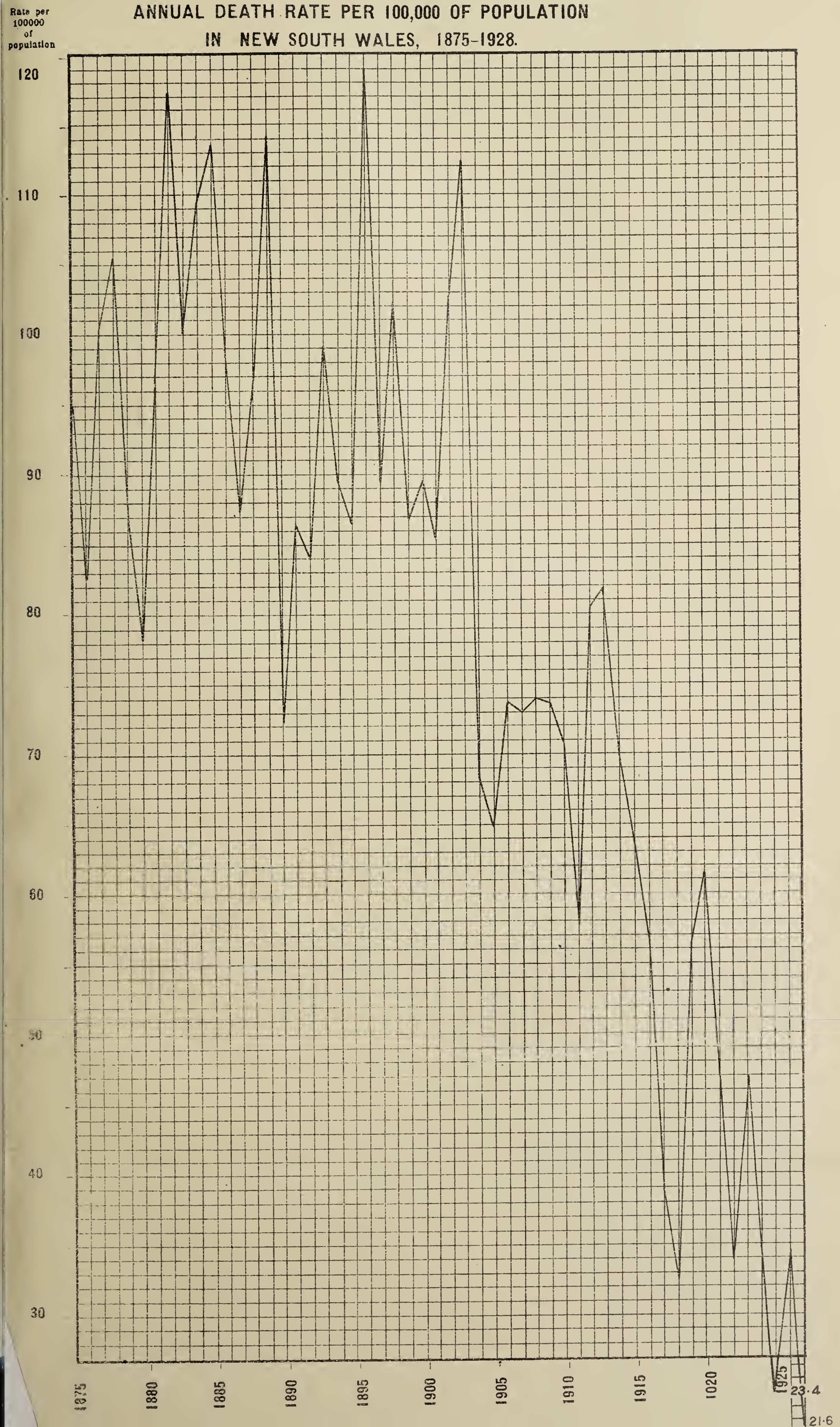
Infantile Mortality in the 1st Month of Life, 1900 to 1928. " " ————————



GRAPH No. 4

DIARRHŒA AND ENTERITIS (Under 2 years).

ANNUAL DEATH RATE PER 100,000 OF POPULATION IN NEW SOUTH WALES, 1875-1928.



Many interesting meetings have been held in different places at which the Department's cinema has been used by the Publicity Officer to project health films in order to reinforce the information conveyed by the lecturer.

Members of the honorary medical and of the nursing staff have extended much help to the Department at various times by giving lectures and demonstrations at Health Centres, country conferences arranged by the Department of Agriculture, or by the Country Women's Association, and radio talks, especially during Health Week and Milk Week when public opinion is focussed on these activities.

Lectures are given annually to girls of the Domestic Science Classes of several schools, and it is felt that such work as this will have a great effect on the future standard of mothercraft.

A feature of the year's activities was the prominent part played by this Division in the Health Week Exhibition held at the Town Hall in October. A model Baby Health Centre and model Ante-Natal Clinic were arranged, and several of the nurses were in constant attendance to demonstrate the exhibits, answer inquiries, and give advice to those seeking it.

In concluding this report I would like to place on record my sincere appreciation of all the various women's organisations and their endeavours to improve our present position in regard to Maternal and Baby Welfare. Especially would I like to thank the Country Women's Association for its practical assistance and co-operation. Special thanks are due to the British Medical Association for permission to use its rooms for our staff meetings during the year.

E. SYDNEY MORRIS,
Director of Maternal and Baby Welfare.

TABLE III.

Baby Health Centres.	Visits to Individual New-born Babies.		Subsequent Visits to New-born Babies.		Total Attendances, including Expectant Mothers.		Individual Babies attending Centres.	
	1927.	1928.	1927.	1928.	1927.	1928.	1927.	1928
Alexandria	548	531	2,440	2,063	4,667	4,553	....	556
Ashfield	502	458	984	1,150	4,490	7,325	....	617
Auburn	678	678	1,580	1,680	4,969	4,905	....	447
Balmain	601	625	1,756	1,932	7,843	8,540	....	707
Bankstown	412	468	583	569	2,154	2,965	....	392
Burwood	868	797	1,375	1,528	8,303	9,064	....	926
Camperdown	328	302	1,817	1,821	2,880	3,011	....	150
Chippendale	564	620	1,837	2,093	5,687	6,269	....	478
Campsie	780	796	890	1,695	5,252	8,735	....	852
Chatswood	476	496	570	955	7,372	7,939	....	984
Glebe	384	407	1,443	2,181	4,617	5,985	....	540
Granville	353	455	1,249	1,293	3,685	4,155	....	482
Hornsby	216	238	1,095	832	3,847	3,493	....	423
Hurstville and Depot	731	715	1,116	1,518	5,391	7,458	....	734
Kogarah	447	420	1,249	1,274	3,386	4,573	....	520
Leichhardt	551	623	1,734	2,316	5,342	6,124	....	302
Manly	524	547	2,550	1,965	9,137	9,659	....	797
Mosman	316	342	1,721	1,344	6,283	7,903	....	598
Marrickville	362	527	1,511	1,964	4,836	6,456	....	775
Miller's Point	93	79	718	667	1,254	1,148	....	124
Mascot	368	439	861	1,820	4,222	4,943	....	473
Newtown	670	692	1,451	2,309	10,045	11,539	....	904
North Sydney	769	758	1,595	1,916	7,586	8,500	....	732
Paddington	456	416	1,746	1,958	8,121	7,572	....	872
Parramatta	497	457	845	1,476	5,216	7,493	....	784
Petersham	282	293	1,035	1,021	4,847	5,499	....	496
Pyrmont	166	149	1,537	1,263	2,734	3,617	....	191
Randwick	438	492	1,436	1,815	5,547	8,635	....	475
Rockdale	631	603	1,213	1,281	6,939	7,917	....	646
Rose Bay	365	509	1,472	1,887	7,396	9,316	....	708
St. Peters	293	302	1,098	1,762	2,238	2,362	....	276
Surry Hills	369	348	922	986	4,545	5,010	....	493
South Kensington	494	499	1,395	2,598	3,961	6,273	....	774
Waverley	721	639	1,080	1,458	8,616	11,665	....	1,098
Woolloomooloo	242	252	1,306	1,385	6,920	7,262	....	668
Ryde	....	350	....	1,089	....	4,222	....	518
Lane Cove (6 months)	....	175	....	543	....	2,478	....	144
Cessnock and Depot	556	566	1,316	1,507	4,552	5,230	....	435
Hamilton and Depot	680	721	1,663	1,930	8,424	9,638	....	926
Bathurst	254	249	771	712	3,824	3,734	....	350
Central Broken Hill	299	232	1,190	1,405	4,169	4,167	....	470
Railway Tn., Broken Hill	122	79	736	813	3,583	3,877	....	294
South Broken Hill	99	93	832	876	2,639	2,531	....	237
North Broken Hill	178	121	847	1,013	2,244	3,229	....	269
Mayfield and Depots	670	704	1,788	2,346	5,850	8,927	....	765
Wagga and Depots	670	211	1,219	1,162	4,128	4,554	....	449
Kurri and Depot	312	322	1,380	1,412	4,419	5,792	......	460
Lithgow	354	329	1,185	1,314	3,474	4,062	....	260
Newcastle and Depots	723	507	2,221	2,716	7,138	7,737	....	958
New Lambton and Depots	379	425	1,511	1,768	4,611	5,372	....	494
West Maitland and Depots	353	557	1,251	1,323	3,590	4,945	....	275
Goulburn and Depot	306	395	1,003	1,074	2,005	5,004	....	592
Yass (10 months)	....	85	....	1,043	....	1,944	....	187
Cootamundra (6 months)	....	107	....	634	....	900	....	130
Albury (6 months)	....	161	....	434	....	2,477	....	289
Moree	....	128	....	1,306	....	1,850	....	150
Tamworth (10 months)	....	313	....	1,003	....	4,175	....	384
Wollongong	....	230	....	627	....	4,000	....	250
Singleton (3 months)	....	60	....	117	....	268	....	90
Totals	22,450	24,092	66,123	83,942	254,978	328,976	....	30,370

TABLE IV.

SUMMARY OF ACTIVITIES OF BABY HEALTH CENTRES, 1928.

		Total Visits Paid by Nurses.	Total Attendances at Baby Health Centres.
1. Expectant Mothers—			
Number visiting centres for first time	3,198	....	4,355
Number of visits paid to centres subsequently	1,157		
Number visited in own homes by nurse	1,864	1,864	....
2. Babies Enrolled—			
Total number individual babies attending Baby Health Centres	30,370	....	....
Number new babies enrolled during year	24,189	....	....
3. Visits by Nurses—			
Number of primary visits to new-born babies	24,092	108,034	....
Number of subsequent visits to new-born babies	83,942		
4. Method of Feeding—			
Number of babies wholly breast-fed up to 3 months of age	4,912	....	....
Number of babies wholly breast-fed up to 6 months of age	3,090	....	....
Number of babies wholly breast-fed up to 9 months of age	6,903	....	....
Number of babies partially breast-fed up to 9 months of age	5,529	....	....
Number of babies wholly artificially fed	3,168	....	....
Number of babies over the age of 9 months and weaned	6,768	....	....
5. Letters of Advice—			
Number of letters requesting advice answered by nurses	728	....	....
6. Attendances—			
Number of attendances by babies under 1 year of age	274,600	....	324,621
Number of attendances by babies over 1 year and under 2	39,506		
Number of attendances by babies over 2 years and under 3	7,304		
Miscellaneous visits—Mothers without infants, children over 3 years, &c.	3,211		

SECTION I—C.

COMMUNICABLE DISEASES.

1.—NOTIFIABLE INFECTIOUS DISEASES RECORDED IN NEW SOUTH WALES DURING THE YEAR ENDED 31st DECEMBER, 1928.

(F. S. Wearne.)

Public Health Acts, 1902–1921.

This Act provides that the Governor may, by Proclamation in the *Government Gazette.* declare that any disease therein-named is an infectious disease. At the end of the year the ordinarily notifiable diseases under the Public Health Act of 1902 were as shown in the following table :—

	Notifiable from—	Cases and Deaths Notified.					
		1926.		1927.		1928.	
		Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Typhoid fever and paratyphoid	1st January, 1898	698	80	460	68	453	60
Scarlet fever	,,	4,755	53	8,369	113	5,531	105
Diphtheria or membranous croup	,,	3,579	147	4,059	179	3,835	168
Bubonic plague	23rd January, 1900	...	...	...	...	...	...
Infantile paralysis (acute anterior poliomyelitis)	1st February, 1912	81	21	25	4	30	2
Epidemic cerebro-spinal fever (meningococcal meningitis)	11th October, 1915	32	23	25	10	31	8
Encephalitis lethargica	1st April, 1926	...	33*	3	27*	18	23
Cholera	12th August, 1927	...	...	...	...	...	...
Typhus fever	,,	...	...	...	...	...	...
Yellow fever	,,	...	...	...	...	...	...
	Total	9,145	357	12,941	401	9,898	366
	Population at 31st Dec.	2,349,401		2,401,884		2,446,874	

The number of cases of the above diseases notified in each district in 1928, deaths therefrom, and age and seasonal incidence are shown in Tables I-VI, pp. 36–43 Pulmonary tuberculosis is notifiable under the Public Health (Amendment) Act, 1915. (See below.)

It will be noticed that there was a very considerable decrease in notifications in 1928 compared with 1927, the fewer cases being principally due to the decline in scarlet fever.

Typhoid Fever.—453 cases and 60 deaths is the lowest incidence on record; the lowest number of cases and deaths previously recorded was in 1927 (460 cases and 68 deaths).

Scarlet Fever continued in epidemic form, 5,531 cases being notified, with 105 deaths. The peak of the epidemic was reached in 1927 (8,369 cases and 119 deaths).

Diphtheria was less prevalent, 3,835 cases and 168 deaths being notified compared with 4,059 cases and 179 deaths in 1927.

Infantile Paralysis.—30 cases and 2 deaths were notified; in 1927 there were 25 cases and 4 deaths.

Cerebrospinal Meningitis.—31 cases and 25 deaths were notified.

Encephalitis Lethargica.—18 cases and 23 deaths* were notified. Inquiries made in previous years disclosed that a considerable percentage of the deaths were due to non-notifiable forms of encephalitis, such as cerebral abscess, cerebral atrophy, cyst of brain, brain tumours and traumatic conditions.

Bubonic Plague.—No case of plague was reported in 1928. Systematic rat-trapping was continuous, and no plague-infected animals were found. Detailed statements in regard to bacteriological examinations of rats and their ectoparasites are given in Part IV, p. 123.

Smallpox.—No case of smallpox was reported in this State during 1928.

Leprosy.—The Annual Report on Leprosy in New South Wales will be found in Section III (p. 101). At the end of 1928 there were 20 lepers (16 males and 4 females) under detention. Medical practitioners attending or becoming aware of cases of leprosy or suspected leprosy are required to notify the cases, in writing, under Part III, Division 2, of the Public Health Act, 1902.

Pulmonary Tuberculosis—Public Health (Amendment) Act, 1915.

Tuberculosis has been notifiable in the City of Sydney from 18th October, 1904, under City Council by-law. Cases notified within the city from 1st January, 1905, and subsequently under the Public Health (Amendment) Act, 1915, are shown in Table VI (p. 43).

By proclamation under the Public Health (Amendment) Act, 1915, pulmonary tuberculosis was made notifiable in the Metropolitan and Hunter River Combined Sanitary Districts from 11th August 1915; in the Katoomba Municipality and Blue Mountain Shire from 2nd October, 1916; and in the Blackheath Municipality from 17th December, 1920. Pulmonary tuberculosis is now being made notifiable throughout the State.

The report of the Tuberculosis Division appears on p. 49; and of Waterfall Sanatorium (with a brief note on the use of Trirodol) on p. 109.

Venereal Diseases Act, 1918.

This Act has been in operation since December, 1920. Activities under it are recorded in the Annual Report of the Commissioner (Dr. Robert Dick), p. 44. Total notifications for 1928, 5,226, a decrease of 445 compared with 1927.

TABLE I.—Showing the number of notified cases of, and deaths from, the following diseases:—Cerebrospinal Fever (Meningococcal Meningitis), Diphtheria and Membranous Croup, Encephalitis Lethargica, Infantile Paralysis (Acute Anterior Poliomyelitis), Plague, Scarlet Fever, Typhoid Fever (including Paratyphoid), and Pulmonary Tuberculosis—in the METROPOLITAN COMBINED DISTRICTS for the year ended 31st December, 1928.

District.	Population.	Typhoid and Paratyphoid.		Scarlet Fever.		Diphtheria.		Infantile Paralysis.		Cerebro-spinal Meningitis.		Encephalitis Lethargica.		Pulmonary Tuberculosis.	
		C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
METROPOLITAN MUNICIPALITIES.															
Sydney, City of	109,830	6	3	163	4	137	8	...	...	...	...	1	1	160	96
Alexandria	10,220	...	...	28	1	26	...	1	...	...	...	...	...	6	9
Annandale	13,020	...	...	17	...	25	2	...	...	1	...	...	...	12	8
Ashfield	39,060	...	...	154	3	56	3	1	...	2	...	...	1	32	26
Balmain	32,950	...	2	66	2	50	6	...	...	...	...	1	...	24	26
Bexley	19,140	1	...	80	1	12	...	...	...	...	...	...	...	7	5
Botany	7,260	1	...	26	2	18	2	...	...	...	...	...	...	6	1
Burwood	18,870	1	...	80	1	44	2	...	...	1	1	...	...	8	5
Canterbury	67,210	28	1	291	5	130	5	...	...	2	...	1	1	24	22
Concord	20,950	5	...	149	5	82	3	...	...	1	...	...	...	8	6
Darlington	3,660	...	...	6	1	8	...	...	...	...	...	...	...	3	3
Drummoyne	27,550	1	...	61	...	39	1	1	...	...	1	...	...	16	16
Eastwood	2,780	...	...	4	...	...	...	...	...	...	...	...	...	4	4
Enfield	13,380	2	...	88	2	87	3	...	...	...	...	1	...	10	6
Erskineville	7,590	...	...	21	1	16	...	...	...	...	...	...	...	6	3
Glebe	23,050	2	...	31	2	54	3	...	...	3	1	...	...	26	16
Homebush	2,990	1	1	26	1	11	...	...	...	2	...	...	...	7	1
Hunter's Hill	9,360	2	...	10	1	6	...	...	...	...	...	...	...	4	1
Hurstville	19,860	6	...	124	5	37	3	...	...	1	...	...	...	23	6
Kogarah	26,970	2	1	107	1	33	...	...	...	...	...	...	...	14	13
Ku-ring-gai	25,940	4	...	78	1	16	2	...	...	...	...	...	...	19	17
Lane Cove	14,100	2	...	49	...	19	1	1	...	...	...	...	...	6	4
Leichhardt	31,090	...	...	83	1	36	5	...	...	...	1	...	...	17	11
Manly	25,310	3	...	42	...	18	...	...	...	...	...	...	1	12	7
Marrickville	45,920	4	1	139	1	90	...	...	...	...	...	1	...	44	25
Mascot	13,050	...	...	38	2	47	1	...	...	...	...	1	1	9	6
Mosman	24,360	4	...	41	...	8	1	...	...	...	...	1	1	12	8
Newtown	28,520	...	...	75	3	57	1	...	...	1	...	...	...	42	22
North Sydney	54,210	1	1	115	2	40	2	...	...	1	...	1	1	25	21
Paddington	26,940	1	...	110	2	43	2	...	...	...	...	...	...	26	16
Petersham	27,710	...	...	90	1	35	2	1	...	...	...	...	...	21	15
Randwick	70,810	6	1	148	2	63	6	1	...	...	...	...	...	92	42
Redfern	24,110	2	...	54	4	38	...	1	...	...	...	...	...	36	20
Rockdale	35,000	10	...	130	1	49	...	1	...	1	1	...	...	13	12
Ryde	23,450	4	1	70	...	41	3	1	...	...	...	...	...	7	14
St. Peters	13,680	...	...	61	...	20	...	...	...	...	...	...	...	10	4
Strathfield	11,600	2	2	46	3	23	1	...	...	...	...	...	...	3	4
Vaucluse	6,830	1	...	18	...	4	...	...	...	...	...	...	...	2	2
Waterloo	12,300	1	...	21	...	22	...	...	...	...	...	...	...	10	13
Waverley	50,780	7	...	149	1	75	1	...	...	...	...	...	1	43	26
Willoughby	40,640	...	1	148	1	52	3	1	...	...	...	...	2	18	15
Woollahra	33,310	3	...	105	...	18	1	1	...	...	...	...	...	18	9
	1,115,400														
EXTRA-METROPOLITAN MUNICIPALITIES.															
Auburn	18,910	1	...	50	1	46	1	...	...	...	...	...	...	10	7
Bankstown	19,730	1	...	49	1	52	1	1	...	1	1	...	...	4	13
Cabramatta and Canley Vale	4,430	1	...	14	...	6	...	...	...	...	...	...	...	...	7
Dundas	5,190	...	...	29	...	12	1	...	...	...	...	...	...	1	2
Ermington and Rydalmere	2,090	...	...	3	...	1	...	...	...	...	...	...	...	7	1
Fairfield	7,320	3	...	15	...	18	...	...	...	...	...	...	...	11	6
Granville	18,000	1	...	54	2	30	5	...	...	...	...	...	...	11	10
Holroyd	13,460	4	...	44	1	48	...	...	...	...	...	...	...	4	12
Ingleburn	1,500	...	...	...	...	...	...	...	...	...	...	...	...	2	...
Lidcombe	14,680	4	...	35	1	41	2	1	...	1	1	...	...	84	26
Liverpool	6,030	3	...	3	...	3	...	...	...	...	...	...	...	9	4
Parramatta	16,970	...	...	92	1	20	...	...	...	...	...	...	...	10	11
SHIRES.															
Hornsby	19,670	3	...	48	4	18	...	...	...	...	...	...	1	16	23
Warringah	11,700	...	...	22	1	33	...	...	...	...	...	...	...	...	6
Harbour of Port Jackson	....	3	...	5	...	1	...	...	...	...	...	...	...	3	...
Totals	1,278,130	137	15	3,805	75	2,014	83	13	...	18	7	8	11	1,060	714

Table II.—Showing the number of notified cases of, and deaths from, Cerebro-spinal Fever (Meningococcal Meningitis), Diphtheria or Membranous Croup, Encephalitis Lethargica, Infantile Paralysis (Acute Anterior Poliomyelitis), Scarlet Fever, Typhoid Fever, including Paratyphoid, and Pulmonary Tuberculosis, in the Hunter River Combined District, for the year ended 31st December, 1928.

District.	Population.	Typhoid and Paratyphoid.		Scarlet Fever.		Diphtheria.		Pulmonary Tuberculosis.	
		C.	D.	C.	D.	C.	D.	C.	D.
	Municipalities.								
Adamstown	4,660	...	...	2	...	18	1	1	...
Carrington	3,050	5	...	1	...	10	...	1	2
Cessnock	14,260	2	...	16	...	47	1	5	9
Greta	1,540	...	...	3	...	2	...	2	...
Hamilton	19,600	1	...	27	...	17	...	3	4
Lambton	4,340	...	...	3	...	10	1	2	1
Maitland East	4,000	10	1	2	...	22	...	1	1
Maitland West	8,360	5	2	9	1	32	1	6	2
Merewether	8,020	4	1	16	...	16	1	1	1
Morpeth	1,060	9	...	6	...	1	...	...	...
Newcastle	15,010	6	1	7	1	19	...	8	13
New Lambton	5,770	...	...	3	...	9	...	2	1
Raymond Terrace	830	...	...	...	...	...	...	...	...
Singleton	3,350	...	...	3	...	8	...	3	1
Stockton	5,430	1	...	2	...	3	...	...	2
Wallsend	7,270	4	...	10	...	41	...	3	2
Waratah	17,430	1	...	10	...	31	...	6	7
Wickham	12,310	...	...	9	1	17	1	2	5
	Shires.								
Bolwarra	3,340	...	...	1	...	2	...	1	...
Kearsley	24,770	4	2	57	1	65	2	8	6
Lake Macquarie	24,730	13	1	19	...	51	1	5	7
Port Stephens	3,910	...	...	1	...	4	1	1	...
Tarro	6,870	5	1	10	1	16	...	1	2
Harbour of Port Hunter	....	...	...	...	...	...	...	...	...
Total	199,910	70	9	217	5	441	10	62	66

Cerebrospinal Meningitis, 1 case (Waratah). *Encephalitis Lethargica,* 2 cases (Lambton, 1; Wallsend, 1). (3 deaths—Maitland East, 1; West, 1; New Lambton, 1. *Infantile Paralysis,* 2 cases (Adamstown, 1; Cessnock, 1).

Table III.—Showing the number of notified cases of, and deaths from, Cerebro-spinal Fever (Meningococcal Meningitis), Diphtheria or Membranous Croup, Encephalitis Lethargica, Infantile Paralysis (Acute Anterior Poliomyelitis), Scarlet Fever, Typhoid Fever, including Paratyphoid, and Pulmonary Tuberculosis, in the Remainder of State, for the year ended 31st December, 1928.

District.	Estimated Mean Population.	Typhoid and Paratyphoid.		Scarlet Fever.		Diphtheria.		Pulmonary Tuberculosis.	
		C.	D.	C.	D.	C.	D.	C.	D.
	Municipalities.								
Aberdeen	870	...	...	...	...	...	...	...	...
Albury	8,460	3	...	34	...	25	1	...	6
Armidale	5,790	...	...	25	...	2	...	...	3
Ballina	2,970	...	...	2	...	3	...	...	...
Balranald	1,020	...	...	7	...	...	...	...	...
Barraba	1,240	...	...	2	...	1	1	...	1
Bathurst	9,230	1	...	17	...	3	2	...	7
Bega	1,810	...	...	9	...	1	...	...	1
Berry	2,440	...	...	1	...	2	...	...	2
Bingara	1,000	...	...	3	...	3	...	...	...
Blackheath	2,590	...	...	...	...	1	...	2	1
Blayney	1,450	...	1	...	...	15	1	...	1
Bombala	980	...	...	4	...	7	1	...	...
Bourke	1,560	...	1	...	...	...	...	...	1
Bowral	2,930	...	...	17	...	...	...	...	1
Braidwood	1,000	...	...	...	...	...	...	...	1
Brewarrina	580	1	...	...	...	...	...	...	3
Broken Hill	23,740	49	2	4	...	17	2	...	36
Broughton Vale	230	...	...	...	...	...	...	...	...
Burrowa	1,270	1	...	1	...	...	...	...	1
Camden	2,110	...	...	9	...	...	...	...	...
Campbelltown	2,490	2	...	3	...	4	1	...	5
Carcoar	460	...	...	...	...	3	...	...	...
Casino	3,450	2	...	6	...	12	...	...	...
Castlereagh	320	1	...	...	...	...	...	...	...
Cobar	1,030	3	1	...	...	8	1	...	2
Condobolin	1,570	...	...	13	...	2	1	...	4
Cooma	1,840	...	...	7	...	...	...	...	2
Coonamble	2,290	...	...	9	...	7	...	...	2
Cootamundra	3,830	2	...	4	...	5	...	...	3
Coraki	1,280	...	...	1	...	1	...	...	...
Corowa	2,570	...	...	9	...	8	1	...	1
Cowra	4,350	2	...	17	...	18	...	...	1

REMAINDER OF STATE.—Return showing the number of Cases, &c., from Country Municipalities—*continued.*

District.	Estimated Mean Population.	Typhoid and Paratyphoid.		Scarlet Fever.		Diphtheria.		Pulmonary Tuberculosis.	
		C.	D.	C.	D.	C.	D.	C.	D.
	MUNICIPALITIES—*continued.*								
Deniliquin	2,870	2	...	...	...	...	...	...	2
Dubbo	5,330	4	1	...	...	2	3	...	3
Dungog	1,890	1	...	67	...	69	...	...	2
Forbes	4,700	3	...	8	...	2	...	...	5
Gerringong	800	...	...	22	...	5	...	...	1
Glen Innes	4,550	...	...	15	...	3	...	...	1
Goulburn	12,030	3	...	23	1	18	1	...	8
Grafton	4,770	...	...	5	...	9	...	...	3
Grafton South	1,620	...	...	...	...	1	...	...	1
Grenfell	1,630	1	1	...	...	...	...	...	...
Gulgong	1,420	...	...	2	...	1	1	...	1
Gunnedah	2,510	2		21	1	4	...	...	...
Hay	2,570	2	...	4	...	1	...	...	...
Hillston	740	...	...	16	...	8	1	...	1
Illawarra Central	5,790	8	1	8	...	9	1	...	3
Illawarra North	6,840	...	...	8	...	40	2	...	1
Inverell	4,530	...	1	7	...	20	2	...	1
Jamberoo	1,090	...	...	...	...	...	...	...	...
Junee	3,660	...	...	2	...	2	...	...	4
Katoomba	10,070	1	...	13	1	1	...	23	8
Kempsey	3,450	...	...	4	...	5	...	...	2
Kiama	2,200	...	...	5	...	2	...	...	2
Lismore	9,330	2	...	5	...	23	1	...	1
Lithgow	16,430	12	...	57	4	57	...	...	2
Maclean	1,580	...	...	...	...	...	...	...	...
Manilla	1,380	1	...	13	...	13	...	...	1
Mittagong	1,510	...	...	24	1	2	...	...	...
Moama	750	...	...	...	...	...	...	...	1
Molong	1,550	...	...	...	...	...	...	...	2
Moree	3,350	1	1	1	...	...	...	...	1
Moss Vale	2,160	...	...	3	...	6	1	...	1
Mudgee	2,970	...	...	7	...	6	1	...	4
Mullumbimby	1,290	...	...	1	...	4	1	...	...
Murrumburrah	2,930	...	...	...	...	2	...	...	...
Murrurundi	1,470	...	...	...	...	...	...	...	1
Murwillumbah	2,860	...	...	1	...	10	1	...	...
Muswellbrook	2,440	...	...	12	...	6	...	...	...
Narrabri	2,460	1	...	1	...	8	2	...	1
Narrabri, West	920	...	...	...	...	6	...	...	...
Narrandera	3,490	4	1	12	1	14	...	...	2
Narromine	1,440	1	...	1	...	7	1	...	1
Nowra	2,430	...	...	3	...	4	...	...	3
Nyngan	1,210	...	...	4	...	...	...	...	...
Orange	8,050	3	...	58	1	7	...	...	11
Parkes	4,800	6	...	2	...	2	1	...	4
Peak Hill	1,160	...	...	...	...	4	1	...	...
Penrith	3,810	1	...	6	...	11	1	...	4
Pieton	1,010	...	...	1	...	...	...	...	1
Port Maeqnarie	1,670	...	...	2	...	...	...	...	...
Queanbeyan	4,210	...	...	4	1	5	1	...	2
Quirindi	2,280	16	4	1	...	10	1	...	1
Riehmond	1,920	...	...	...	...	1	...	...	1
Seone	1,850	...	...	6	...	21	1	...	2
Shellharbour	1,670	...	...	...	...	3	1	...	...
Shoalhaven, South	1,010	...	...	...	...	3	...	...	...
St. Marys	2,040	...	...	3	...	3	...	...	...
Tamworth	7,100	4	...	12	...	63	1	...	2
Taree	2,300	...	...	2	...	10	...	...	1
Temora	3,280	...	...	12	...	2	1	...	4
Tenterfield	2,520	...	...	...	...	4	...	...	...
Tumut	....	1	1	24	...	15	...	...	3
Ulladulla	1,320	...	...	...	...	1	...	...	2
Ulmarra	2,160	...	...	1	...	...	...	...	...
Uralla	960	...	...	10	...	1	...	...	...
Wagga	8,590	1	...	22	...	6	...	...	4
Waleha	1,250	...	...	4	...	2	...	...	...
Wallendbeen	820	...	...	...	...	...	...	...	...
Warren	1,190	...	...	5	...	...	...	...	2
Wellington	3,380	...	...	11	...	11	...	...	...
Wentworth	980	...	...	...	...	...	...	...	...
Wileannia	470	...	...	1	...	...	...	...	...
Windsor	4,190	...	...	7	1	1	...	...	1
Wingham	1,290	...	...	...	...	...	...	...	1
Wollongong	7,780	2	...	40	1	19	2	...	3
Wyalong	800	...	...	8	...	4	...	...	1
Yass	2,590	3	1	9	...	1	...	...	3
Young	3,520	10	1	8	...	...	...	...	2
Total Municipalities	....	163	18	838	13	728	42	25	210

Cerebrospinal Meningitis: Cases, 9. (Central Illawarra, 1; Manilla, 3; Moss Vale, 5). Deaths, 1. (Manilla, 1).

Encephalitis Lethargica: Cases, 5. (Aberdeen, 1; Gerringong, 1; Grenfell, 1; Moree, 1; Yass, 1). Deaths, 4. (Broken Hill, 1; Casino, 1; Forbes, 1; Lithgow, 1).

Infantile Paralysis: Cases, 5. (Aberdeen, 1; Broken Hill, 1; Illawarra, Central, 1; Lismore, 1; Wentworth, 1). Deaths, 2. (Aberdeen, 1; Wentworth, 1).

REMAINDER OF STATE.—Return showing the number of Cases, &c., from Country Shires.

Shires.	Estimated Mean Population.	Typhoid and Paratyphoid.		Scarlet Fever.		Diphtheria.		*Pulmonary Tuberculosis.	
		C.	D.	C.	D.	C.	D.	C.	D.
2. SHIRES.									
Abercrombie	3,670	1	...	6	...	1	1	...	2
Amaroo	3,000	...	...	4	...	...	...	...	...
Apsley	2,560	...	...	...	...	...	...	...	...
Ashford	2,180	...	...	...	...	2	...	...	...
Bannockburn	3,210	...	...	1	...	4	...	...	...
Barraba	2,190	...	...	...	...	...	...	...	...
Baulkham Hills	5,650	2	...	16	1	3	1	...	3
Bellingen	4,860	...	...	2	...	4	...	...	2
Berrigan	4,500	...	...	5	...	11	...	...	...
Bibbenluke	2,790	1	1	7	...	3	...	...	...
Blacktown	8,970	3	...	49	1	46	2	...	8
Bland	8,090	3	...	21	...	14	1	...	4
Blaxland	9,410	...	...	20	...	13	1	...	3
Blue Mountains	7,440	1	...	10	...	6	...	65	26
Bogan	1,800	...	...	2	...	...	...	...	1
Boolooroo	2,670	...	...	1	...	2	...	...	...
Boomi	3,070	...	...	...	...	1	...	...	...
Boree	6,350	...	...	8	2	...	...	...	2
Bulli	12,440	3	2	6	...	30	3	...	12
Burrangong	4,600	...	1	11	...	2	...	...	...
Byron	7,770	...	...	12	...	16	2		1
Cambewarra	1,310	...	...	...	...	...	...	...	...
Canoblas	5,870	...	...	13	1	3	...	...	3
Carrathool	2,380	1	...	3	...	4	...	...	...
Clyde	1,650	...	...	...	...	1	...	...	...
Cobborah	5,280	1	...	16	...	13	...	...	1
Cockburn	3,790	2	...	4	...	8	...	...	1
Colo	4,870	...	...	...	...	...	...	...	1
Conargo	950	...	...	...	...	1	...	...	...
Coolah	1,630	...	...	2	...	...	...	...	...
Coolamon	7,070	...	...	5	...	9	...	...	1
Coonabarabran	5.550	...	...	20	...	...	...	...	2
Copmanhurst	3,180	1	...	...		...	...	...	1
Coreen	3,180	1	...	...	...	5	...	...	...
Crookwell	5,910	...	...	...	...	1	...	...	1
Cudgegong	4,770	...	...	4	...	1	...	...	5
Culcairn	5,280	1	...	3	...	1	...	...	1
Dalgety	3,710	...	...	20	...	...	...	...	...
Demondrille	3,330	...	...	1	...	...	...	...	1
Dorrigo	8,310	...	...	4	...	6	...	...	1
Dumaresq	4,560	...	...	7	...	2	...	...	...
Erina	18,740	1	...	12	...	24	...	...	3
Eurobodalla	4,710	...	...	...	...	...	...	...	1
Gadara	6,190	...	...	...	...	...	1	...	...
Gilgandra	4,930	...	...	5	...	13	1	...	1
Gloucester	3,680	1	1	8	...	6	...	...	2
Goobang	5,620	3	...	...	...	3	...	...	...
Goodradigbee	3,230	1	...	5	...	2	...	...	1
Gostwyck	4,070	...	...	10	...	5	...	...	...
Gundagai	4,580	...	1	2	...	...	...	...	1
Gundarimba	4,010	...	...	1	...	1	...	...	...
Gunning	3,350	...	...	11	...	8	...	...	...
Guyra	6,480	1	...	18	...	5	...	...	2
Gwydir	1,110	...	...	...	...	1	...	...	...
Harwood	5,100	...	...	1	...	3	...	...	2
Hastings	7,620	...	...	...	...	2	1	...	2
Holbrook	2,140	2	...	...	...	...	...	...	1
Hume	4,960	4	1	9	1	9	...	...	...
Illabo	2,900	1	...	2	...	5	...	...	...
Imlay	4,460	...	...	8	...	...	...	...	4
Jemalong	3,460	2	1	2	...	2	1	...	2
Jerilderie	1,910	...	...	1	...	1	...	...	1
Jindalee	1,940	...	...	3	...	...	...	...	...
Kyeamba	4,310	...	...	5	...	6	...	...	...
Kyogle	8,920	1	...	5	...	20	1	...	...
Lachlan	5,030	...	...	2	...	4	1	...	3
Liverpool Plains	5,320	1	...	4	...	3	1	...	...
Lockhart	5,860	...	...	17	...	1	...	...	1
Lyndhurst	5,180	...	...	19	...	16	...	...	...
MacIntyre	1,950	...	...	1	...	1	...	...	1
Macleay	7,190	...	...	2	...	6	...	...	3
Macquarie	3,640	...	...	1	...	5	...	...	...
Mandowa	2,600	...	...	6	...	6	...	...	...
Manning	13,890	2	...	2	...	14	1	...	3
Marthaguy	1,620	1	...	...	...	...	...	...	...
Merriwa	2,580	...	...	...	...	...	...	...	...
Mitchell	4,580	1	...	7	...	5	...	...	1
Monaro	2,680	...	...	1	...	...	...	...	...
Mulwaree	7,590	2	1	3	...	4	1	...	4
Mumbulla	3,870	...	...	2	...	5	...	...	2
Murray	2,450	...	...	...	...	...	...	...	...
Murrumbidgee	660	...	...	1	...	1	...	...	...

• Notifiable only in the Blue Mountains Shire.

REMAINDER OF STATE.—Return showing the number of Cases, &c., from Country Shires—*continued.*

Shires	Estimated Mean Population.	Typhoid and Paratyphoid.		Scarlet Fever.		Diphtheria.		*Pulmonary Tuberculosis.	
		C.	D.	C.	D.	C.	D.	C.	D.
SHIRES—*continued*									
Murrungal	2,590	...	...	5	1	13	...	...	...
Muswellbrook	3.350	...	...	2	...	2	1	...	2
Nambucca	6,410	...	...	...	...	...	...	...	1
Namoi	6,450	2	1	2	...	5	...	...	1
Narraburra	4,050	...	...	4	...	2	...	...	...
Nattai	3,980	...	...	...	...	3	...	...	...
Nepean	2,510	...	...	3	...	...	...	...	...
Nundle	1,110	...	...	1	...	...	...	...	1
Nymboida	1,940	...	...	...	...	2	...	...	...
Oberon	2,490	...	...	8	1	...	...	...	1
Orara	1,590	...	...	...	...	...	...	...	...
Patrick's Plains	6,400	...	...	9	...	9	...	...	4
Peel	6,730	...	...	19	1	13	...	...	...
Rylstone	4,280	1	...	9	...	2	1	...	4
Severn	5,410	3	...	19	1	5	1	...	1
Stroud	5,220	1	...	6	1	...	...	...	...
Sutherland	10,130	...	...	15	...	21	...	...	11
Talbragar	3,620	...	...	11	...	13	...	...	2
Tallanganda	2,270	...	...	...	...	...	...	...	1
Tamarang	2,400	...	...	4	...	8	...	...	...
Tenterfield	4,420	...	...	...	...	4	...	...	1
Terania	6,500	...	...	3	...	15	...	...	...
Timbrebongie	4,010	1	...	6	...	8	...	...	...
Tintenbar	6,200	...	...	2	...	2	1	...	...
Tomki	3,510	...	...	...	...	2	...	...	...
Tumbarumba	2,250	3	...	1	...	...	...	...	...
Turon	3,510	2	...	27	1	1	...	...	2
Tweed	10,590	...	...	4	...	4	...	...	1
Upper Hunter	4,360	...	...	6	...	5	...	...	1
Urana	2,550	...	...	4	...	...	...	...	1
Wade	....	...	1	4	...	30	1	...	1
Wakool	3,070	1	...	6	...	1	...	...	...
Walgett	3,070	...	...	...	...	1	1	...	1
Wallarobba	5,540	1	...	3	...	14	1	...	...
Waradgery	790	...	...	1	...	...	...	...	...
Warrah	2,040	...	...	1	...	...	...	...	...
Waugoola	5,730	...	...	7	...	8	...	...	1
Weddin	3,740	...	...	...	...	...	...	...	...
Willimbong	....	2	...	4	...	35	...	...	2
Windooran	900	...	...	...	...	...	...	...	...
Wingadee	3,130	1	...	3	...	7	...	...	...
Wingecarribee	4,130	...	...	1	...	...	...	...	1
Wollondilly	5,070	...	...	1	...	4	1	...	3
Woodburn	2,760	...	...	...	...	...	1	...	...
Wyaldra	2,060	...	...	...	...	2	1	...	...
Yallaroi	2,890	...	...	2	...	3	...	...	...
Yanko	4,580	1	1	4	...	...	...	...	1
Yarrowlumla	2,360	...	...	2	...	4	1	...	2
Total Shires	....	64	12	668	12	648	31	65	171
COUNTRY POLICE DISTRICTS.									
Western Division (Unincorporated)	14,702	...	6	...	...	...	2	...	5
Balranald	....	...	...	...	...	...	...	...	...
Bourke	....	5	...	1	...	...	...	...	...
Brewarrina	....	1	...	...	...	...	...	...	...
Broken Hill	....	3	...	...	...	...	...	...	...
Cobar	....	1	...	2	...	...	...	...	...
Hay	....	...	...	...	...	...	...	...	...
Hillston	....	...	...	...	...	1	...	...	...
Menindie	....	5	...	...	...	...	...	...	...
Mitchell	....	1	...	...	...	1	...	...	...
Walgett	....	...	...	...	...	...	...	...	...
Wentworth	....	...	...	...	...	2	...	...	...
Wilcannia	....	3	...	...	...	...	...	...	...
Total	....	19	6	3	...	4	2	...	5
Outside the State—									
Queensland	....	...	...	...	...	2	...	...	...
Victoria	....	...	...	17	...	19	...	...	...
South Australia	....	...	...	...	...	...	...	...	...
Total	....	...	...	17	...	21	...	...	...

Cerebrospinal Meningitis :—Cases, 3. (Goobang, 1; Macleay, 1; Severn, 1).

Encephalitis Lethargica :—Cases, 3. (Baulkham Hills, 1; Blue Mountains, 1; Jemalong, 1). Deaths, 5. (Baulkham Hills, 1; Boree, 1; Crookwell, 1; Goodradigbee, 1; Waugoola, 1).

Infantile Paralysis :—Cases, 10. (Blue Mountains, 1; Culcairn, 1; Erina, 1; Eurobodalla, 1; Illabo, 3; Tenterfield, 1; Tumbarumba, 2).

* Notifiable only in the Blue Mountains Shire.

Table IV.—Table showing Age and Sex Incidence, and Mortality, in the Metropolitan Combined District, Hunter River Combined District, and Remainder of State, from the notified cases of Cerebro-spinal Fever (Meningococcal Meningitis), Diphtheria and Membranous Croup, Infantile Paralysis (Acute Anterior Poliomyelitis), Encephalitis Lethargica, Scarlet Fever, Typhoid Fever (including Paratyphoid), and Pulmonary Tuberculosis, for the year ended 31st December, 1928.

Age Period.	Typhoid and Paratyphoid.						Scarlet Fever.						Diphtheria.						Encephalitis Lethargica.						Infantile Paralysis.						Cerebro-spinal Meningitis.						*Pulmonary Tuberculosis.					
	Incidence.			Mortality.			Incidence.			Mortality.			Incidence.			Mortality.			Incidence.			Mortality.			Incidence.			Mortality.			Incidence.			Mortality.			Incidence.			Mortality.		
	Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.			Notified Cases.			Notified Deaths.		
	M.	F.	Total	M.	F.	Total	M.	F.	Total	M.	F.	Total	M.	F.	Total	M.	F.	Total	M.	F.	Total	M.	F.	Total	M.	F.	Total	M.	F.	Total	M.	F.	Total	M.	F.	Total	M.	F.	Total	M.	F.	Total
METROPOLITAN COMBINED DISTRICT.																																										
All ages	80	57	137	9	6	15	1,373	2,432	3,805	33	42	75	937	1,077	2,014	42	41	83	3	5	8	3	8	11	10	3	13	...	...	...	12	6	18	4	3	7	657	403	1,060	422	292	714
Under 1 year	...	...	...	...	...	...	17	20	37	2	3	5	34	17	51	1	7	8	...	...	...	...	...	...	...	1	1	...	...	...	5	3	8	2	1	3	...	...	...	1	...	1
1—4	4	2	6	1	...	1	351	394	745	13	16	29	391	375	766	31	23	54	...	...	...	...	...	...	3	...	3	...	...	...	2	2	4	...	2	2	1	1	2	1	1	2
5—14	24	14	38	...	2	2	681	1,227	1,908	11	12	23	413	476	889	8	9	17	...	2	2	...	1	1	5	2	7	...	...	...	4	1	5	...	...	...	8	4	12	5	3	8
15—24	18	10	28	3	...	3	181	416	597	2	3	5	45	88	133	1	...	1	...	...	...	...	1	1	2	...	2	...	...	...	1	...	1	1	...	1	89	129	218	30	66	96
25—34	13	14	27	2	...	2	88	253	341	3	3	6	27	73	100	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	136	127	263	84	90	174
35—44	7	7	14	2	1	3	38	88	126	...	4	4	13	28	41	...	...	...	1	2	3	...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	152	83	235	99	60	159
45—54	6	7	13	1	2	3	10	18	28	2	1	3	3	5	8	...	1	1	1	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	132	24	156	107	36	143
55—64	3	...	3	...	...	...	...	6	6	...	...	...	5	4	9	1	1	2	...	...	...	1	4	5	...	...	...	...	...	...	...	...	...	1	...	1	58	18	76	60	20	80
65 and over	5	1	6	...	1	1	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	41	14	55	35	16	51
Age not stated	...	2	2	...	...	...	7	9	16	...	...	...	6	11	17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	40	3	43	...	...	...
HUNTER RIVER COMBINED DISTRICT.																																										
All ages	37	33	70	6	3	9	76	141	217	4	1	5	200	241	441	4	6	10	1	1	2	2	1	3	1	1	2	...	...	...	1	...	1	...	...	...	29	33	62	29	37	66
Under 1 year	...	...	...	...	...	...	4	1	5	...	...	...	3	2	5	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1—4	1	2	3	...	...	...	19	29	48	2	1	3	112	88	200	4	6	10	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5—14	10	8	18	1	...	1	32	83	115	1	...	1	74	104	178	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...
15—24	14	10	24	...	1	1	9	19	28	...	...	...	6	25	31	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	7	11	5	5	10
25—34	6	3	9	2	1	3	7	6	13	...	...	...	3	12	15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7	7	14	2	11	13
35—44	3	5	8	2	1	3	4	2	6	1	...	1	...	7	7	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	4	7	11	7	15	22
45—54	2	5	7	1	...	1	...	1	1	...	...	...	...	...	...	...	...	...	1	...	1	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	3	8	11	7	3	10
55—64	...	...	...	...	...	...	1	...	1	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	3	6	6	2	
65 and over	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	3	...	3	2	1	3
Age not stated	...	...	...	...	...	...	...	...	...	...	...	...	1	3	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	1	6	...	...	...
REMAINDER OF STATE.																																										
All ages	152	94	246	25	11	36	547	962	1,509	9	16	25	662	718	1,380	50	25	75	3	5	8	2	7	9	11	4	15	1	1	2	8	4	12	1	...	1	53	37	90	230	156	386
Under 1 year	...	...	...	...	...	...	6	4	10	...	...	...	19	4	23	8	4	12	...	...	...	...	...	...	...	...	...	...	1	1	2	...	2	...	...	...	...	...	...	...	...	...
1—4	7	4	11	...	...	...	154	169	323	5	5	10	280	204	484	32	17	49	...	...	...	...	...	...	6	2	8	...	...	...	...	1	1	...	...	...	...	...	...	...	2	2
5—14	33	26	59	2	1	3	268	515	783	3	6	9	258	299	557	7	3	10	...	...	...	2	...	2	3	...	3	...	...	...	3	2	5	...	...	...	...	...	...	2	2	4
15—24	54	24	78	8	6	14	63	161	224	1	2	3	55	104	159	2	...	2	1	1	2	...	2	2	2	1	3	1	...	1	2	1	3	1	...	1	6	12	18	17	29	46
25—34	26	20	46	4	...	4	29	69	98	...	2	2	25	59	84	...	...	...	1	...	1	...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	17	15	32	40	52	92
35—44	15	9	24	3	2	5	14	18	32	...	...	...	12	25	37	...	...	...	...	1	1	...	2	2	...	1	1	...	...	...	1	...	1	...	...	...	22	4	26	50	23	73
45—54	10	6	16	5	1	6	3	7	10	...	...	...	5	12	17	...	...	...	1	2	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6	4	10	39	23	62
55—64	2	3	5	2	1	3	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	2	41	15	56
65 and over	...	2	2	1	...	1	...	1	1	...	1	1	3	2	5	1	1	2	...	1	1	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	41	10	51
Age not stated	5	...	5	...	...	...	10	18	28	...	...	...	5	8	13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...

SUMMARY.

District.	Typhoid Fever.		Scarlet Fever.		Diphtheria.		Infantile Paralysis.		Cerebro-spinal Meningitis.		Encephalitis Lethargica.		*Pulmonary Tuberculosis.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Metropolitan Combined Sanitary District	137	15	3,805	75	2,014	83	13	...	18	7	8	11	1,060	714
Hunter River Combined Sanitary District	70	9	217	5	441	10	2	...	1	...	2	3	62	66
Remainder of State—														
Municipalities	163	18	838	13	728	42	5	2	9	1	5	4	25	210
Shires	64	12	668	12	648	31	10	...	3	...	3	5	65	171
Police Districts	19	6	3	...	4	2	...	...	...	...	...	...	...	5
Total	453	60	5,531	105	3,835	168	30	2	31	8	18	23	1,212	1,166

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* Notifiable only in Blackheath and Katoomba Municipalities and Blue Mountain Shire.

TABLE V.—Showing the seasonal prevalence of Cerebro-spinal Fever (Meningococcal Meningitis), Diphtheria and Membranous Croup, Infantile Paralysis (Acute Anterior Poliomyelitis), Encephalitis Lethargica, Scarlet Fever, Typhoid Fever (including Paratyphoid), and Pulmonary Tuberculosis, in New South Wales for the year ended 31st December, 1928

Month, 1928.	Typhoid Fever and Paratyphoid.								Scarlet Fever.							
	Metropolitan Combined Districts.		Hunter River Combined Districts.		Remainder of State.		Total.		Metropolitan Combined Districts.		Hunter River Combined Districts.		Remainder of State.		Total.	
	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
January	31	3	10	1	31	8	72	12	329	4	15	2	143	4	487	10
February	17	1	10	1	31	7	61	9	199	7	24	...	120	3	343	10
March	11	1	21	2	42	2	74	5	205	1	30	1	160	...	395	2
April	7	1	16	4	22	8	45	13	272	1	29	...	174	1	475	2
May	8	2	2	...	42	3	52	5	364	3	18	...	149	2	531	5
June	12	...	...	...	9	3	21	3	396	4	21	...	105	...	522	4
July	10	2	...	1	8	1	18	4	370	3	17	1	111	3	498	7
August	9	...	2	...	6	...	17	...	374	8	15	...	95	2	484	10
September	2	1	1	...	5	1	8	2	285	2	10	...	67	2	362	4
October	5	1	...	...	10	...	15	1	370	19	9	...	112	1	491	20
November	11	1	3	...	14	1	28	2	357	10	21	1	141	3	519	14
December	14	2	5	...	23	2	42	4	284	13	8	...	132	4	424	17
Total	137	15	70	9	246	36	453	60	3,805	75	217	5	1,509	25	5,531	105

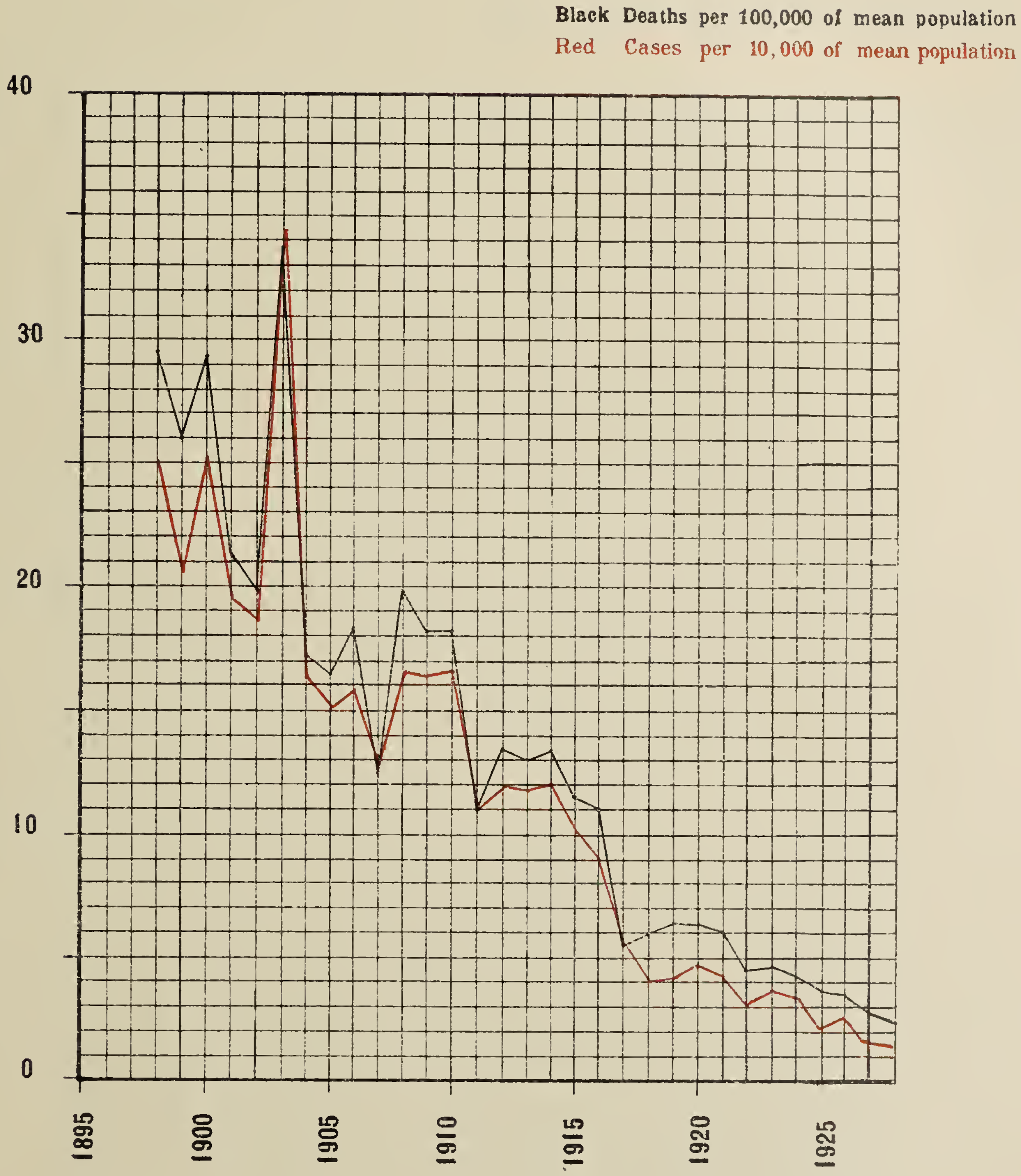
Month, 1928.	Diphtheria.								Encephalitis Lethargica.							
	Metropolitan Combined Districts.		Hunter River Combined Districts.		Remainder of State.		Total.		Metropolitan Combined Districts.		Hunter River Combined Districts.		Remainder of State.		Total.	
	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	
January	118	6	23	2	53	1	194	9	...	1	...	...	2	2	2	3
February	117	3	34	...	54	2	205	5	...	...	...	...	...	...	...	...
March	168	7	77	2	121	8	366	17	1	1	...	...	...	1	1	2
April	229	7	79	...	212	7	520	14	...	1	...	...	1	1	1	2
May	345	19	49	...	242	12	636	31	...	1	...	...	...	1	...	2
June	257	4	30	...	115	9	402	13	...	1	1	...	...	...	1	1
July	197	13	35	...	119	9	351	22	...	1	...	1	...	...	...	2
August	168	6	26	1	109	5	303	12	3	2	...	1	...	2	3	5
September	104	5	20	...	82	7	206	12	3	1	...	1	2	2	5	4
October	106	7	36	2	104	10	246	19	1	1	...	...	2	...	3	1
November	108	4	17	...	89	4	214	8	...	...	...	...	1	...	1	...
December	97	2	15	3	80	1	192	6	...	1	1	...	...	...	1	1
Total	2,014	83	441	10	1,380	75	3,835	168	8	11	2	3	8	9	18	23

Month, 1928.	Infantile Paralysis.								Cerebro-spinal Meningitis.							
	Metropolitan Combined Districts.		Hunter River Combined Districts.		Remainder of State.		Total.		Metropolitan Combined Districts.		Hunter River Combined Districts.		Remainder of State.		Total.	
	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
January	...	...	1	...	1	1	2	1	1	...	...	...	1	...	2	...
February	1	...	...	...	1	...	2	...	1	...	...	...	...	...	1	...
March	...	...	...	...	3	1	3	1	...	...	...	...	...	...	...	...
April	5	...	1	...	5	...	11	...	1	...	...	...	...	...	1	...
May	1	...	...	...	...	...	1	...	...	...	...	...	1	...	1	...
June	...	...	...	...	1	...	1	...	1	...	...	...	...	...	1	...
July	...	...	...	...	...	...	...	...	2	1	...	...	1	...	3	1
August	2	...	...	...	2	...	4	...	3	...	...	...	...	...	3	...
September	2	...	...	...	...	...	2	...	4	4	...	...	4	...	8	4
October	1	...	...	...	...	...	1	...	3	2	...	...	...	1	3	3
November	...	...	...	...	...	...	...	...	2	...	...	...	...	...	2	...
December	1	...	...	...	2	...	3	...	...	...	1	...	5	...	6	...
Total	13	...	2	...	15	2	30	2	18	7	1	...	12	1	31	8

Month, 1928.	Pulmonary Tuberculosis.							
	Metropolitan Combined Districts.		Hunter River Combined Districts.		Remainder of State.		Total.	
	C.	D.	C.	D.		D.	C.	D.
January	70	69	5	6	11	27	86	102
February	119	63	8	3	14	21	141	87
March	83	51	4	2	7	20	94	73
April	72	39	4	4	4	34	80	77
May	105	69	1	6	15	32	121	107
June	86	59	7	5	3	27	96	91
July	65	74	4	5	4	35	73	114
August	106	67	3	3	5	41	114	111
September	95	52	10	10	7	40	112	102
October	95	65	5	6	9	37	109	108
November	93	54	7	6	8	29	108	89
December	71	52	4	10	3	43	78	105
Total	1,060	714	62	66	90	386	1,212	1,166

TYPHOID FEVER.

ANNUAL DEATH RATE PER 100,000 AND CASE RATE PER 10,000 OF POPULATION
IN
NEW SOUTH WALES,
1898–1928.



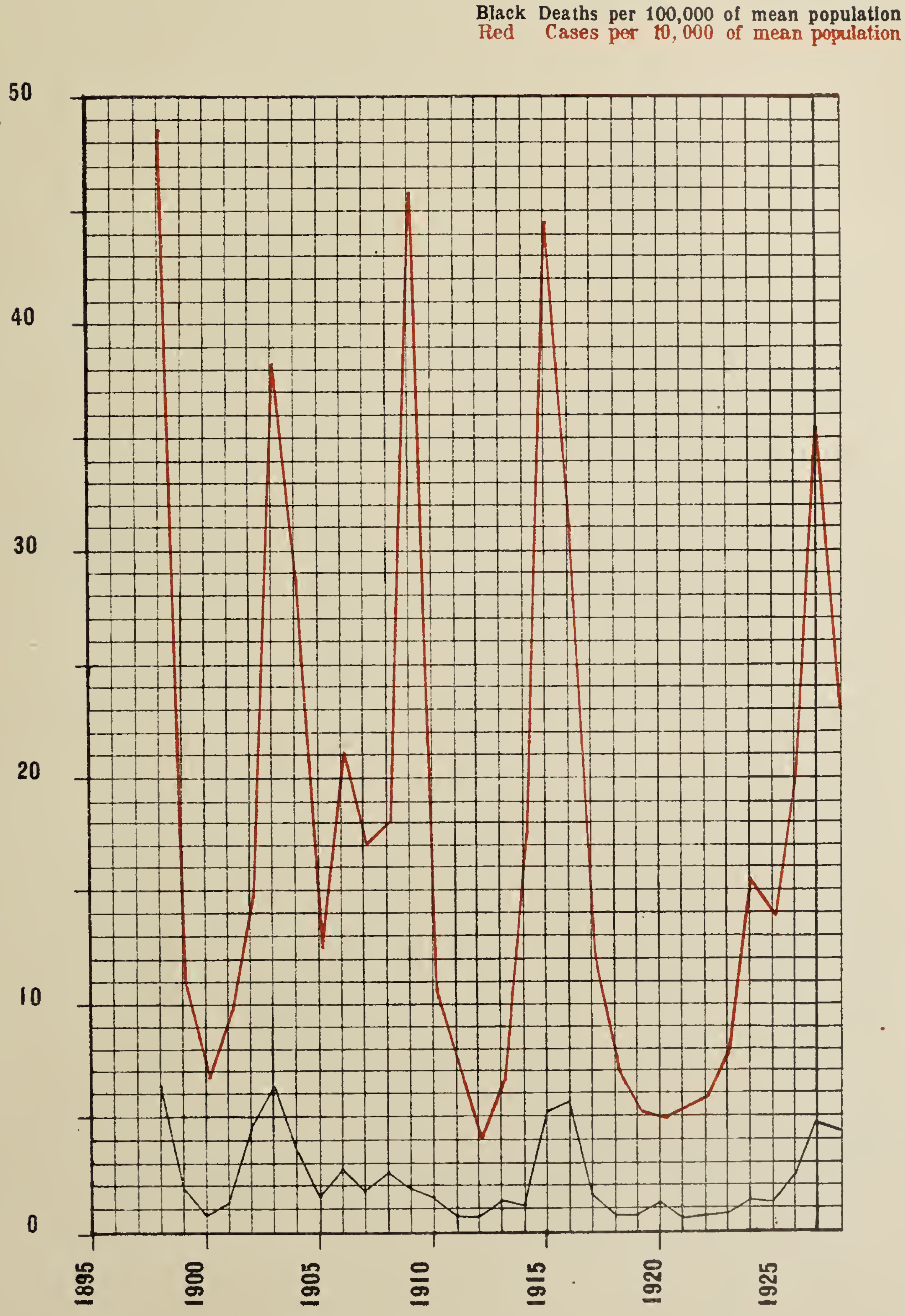
SCARLET FEVER.

ANNUAL DEATH RATE PER 100,000 AND CASE RATE PER 10,000 OF POPULATION

IN

NEW SOUTH WALES,

1898-1928.



DIPHTHERIA

ANNUAL DEATH RATE PER 100,000 AND CASE RATE PER 10,000 OF POPULATION

IN

NEW SOUTH WALES,

1898–1928.

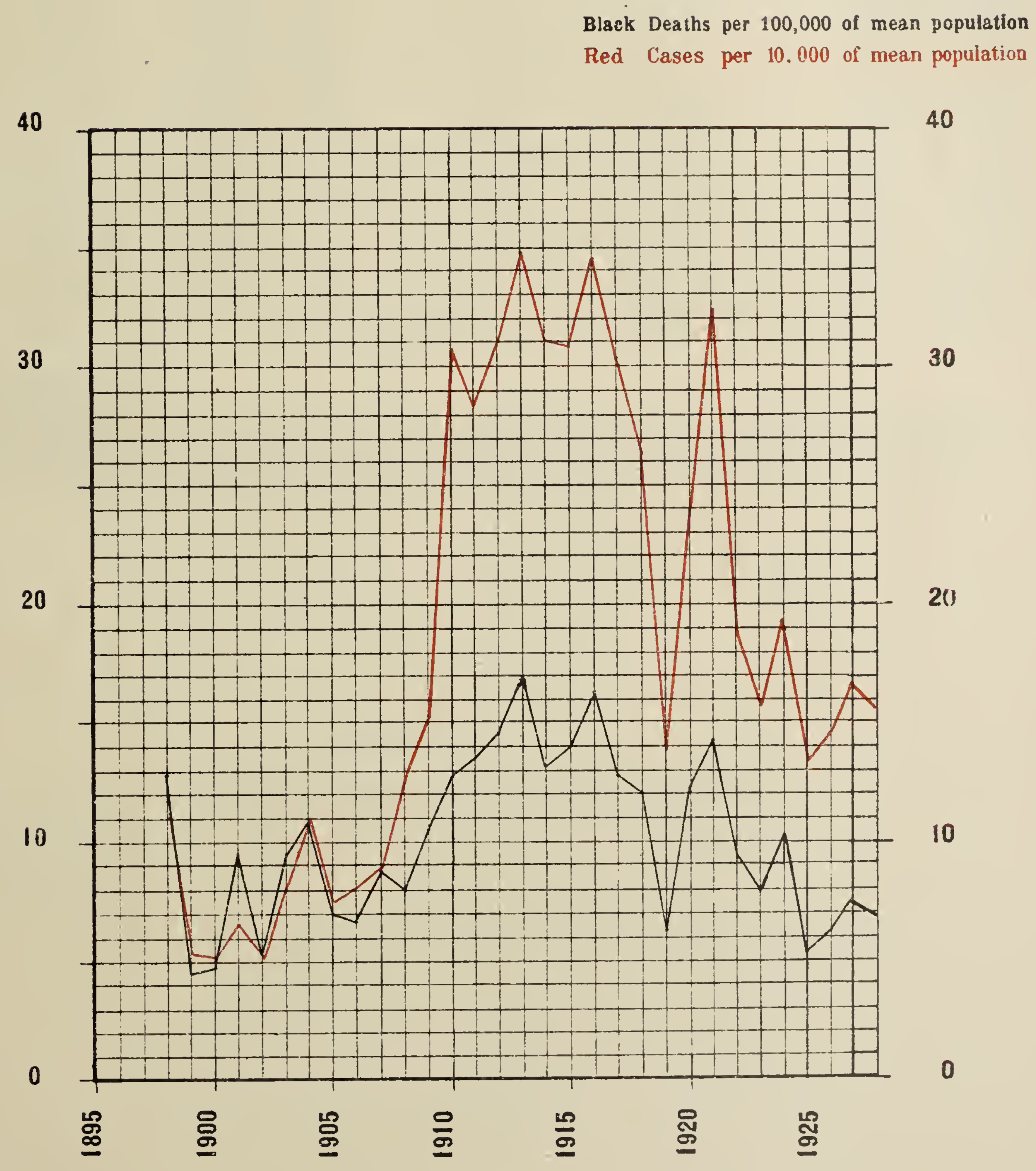


Table VI.—Showing the number of Cases of Infectious Diseases notified in the State of New South Wales during the years 1898 to 1928, inclusive, and the number of deaths therefrom.

Year.	Population.	Typhoid Fever.*		Scarlet Fever.*		Diphtheria.*		Plague.†		Infantile Paralysis.‡		Cerebro-spinal Meningitis.§		Encephalitis Lethargica.‖		Pulmonary Tuberculosis.¶		Total Deaths from Phthisis in N.S.W.§
		Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.		
1898	1,323,130	3,302	387	6,342	83	1,493	169	...	...	...	...	...	...	...	...	...	...	1,104
1899	1,344,080	2,783	347	1,389	25	741	60	...	...	...	...	...	...	...	...	...	...	1,078
1900	1,364,590	3,442	398	895	9	726	63	303	103	...	...	...	...	...	...	...	...	1,056
1901	1,376,199	2,702	291	1,288	16	922	131	...	...	...	...	...	...	...	...	...	...	1,134
1902	1,397,858	2,624	276	2,010	61	757	74	140	41	...	...	...	...	...	...	...	...	1,123
1903	1,416,879	4,855	475	5,358	87	1,214	134	2	...	...	...	...	...	...	...	...	...	1,235
1904	1,440,919	2,370	249	4,056	50	1,584	156	12	6	...	...	...	...	...	...	146	...	1,156
1905	1,469,153	2,226	239	1,773	21	1,118	102	56	21	...	...	...	...	...	...	128	...	1,037
1906	1,498,609	2,373	271	3,085	42	1,219	100	20	8	...	...	...	...	...	...	118	...	1,007
1907	1,531,980	1,972	189	2,570	26	1,376	133	51	20	...	...	...	...	...	...	161	...	961
1908	1,560,026	2,607	307	2,755	40	2,001	123	6	3	...	...	...	...	...	...	112	...	1,008
1909	1,596,685	2,615	287	7,178	30	2,419	166	24	7	...	...	...	...	...	...	196	...	1,040
1910	1,638,220	2,714	294	1,642	23	4,989	207	...	...	...	...	...	...	...	...	184	...	1,024
1911	1,698,735	1,864	184	2,618	11	4,784	226	...	...	...	...	...	...	...	...	222	...	1,099
1912	1,778.962	2,126	236	662	11	5,440	253	...	...	...	...	...	...	...	...	265	...	1,078
1913	1,832,546	2,187	236	1,120	23	6,380	310	...	...	47	10	...	...	...	...	228	...	1,210
1914	1,862,028	2,284	250	3,207	21	5,831	247	...	...	79	14	...	...	...	...	293	...	1,178
1915	1,868,644	1,941	219	8,335	97	5,838	264	...	...	63	11	50	33	...	...	361	86	1,122
1916	1,846,736	1,742	209	5,759	107	6,588	309	...	...	311	21	309	145	...	...	1,499	666	1,157
1917	1,886,701	1,091	103	2,255	27	5,805	247	...	...	16	12	197	98	...	...	1,319	584	1,017
1918	1,928,174	810	112	1,308	15	5,151	221	...	...	50	12	120	80	...	...	1,308	586	1,093
1919	2,000,173	857	106	959	10	2,826	114	...	...	8	3	28	23	...	...	1,102	678	1,216
1920	2,099,763	1,016	132	937	24	5,043	263	...	...	45	10	34	27	...	...	1,509	674	1,118
1921	2,128,786	949	129	1,060	8	6,854	306	2	1	184	22	30	28	...	...	1,240	791	1,129
1922	2,174,688	706	99	1,153	11	4,094	207	33	9	33	5	21	22	...	...	1,045	517	1,080
1923	2,211,106	873	104	2,623	13	3,480	176	1	1	104	8	27	22	...	...	1,218	657	1,109
1924	2,256,649	768	97	3,421	29	4,364	222	...	...	108	6	29	38	...	...	1,096	730	1,165
1925	2,300,081	533	80	3,043	27	3,004	118	...	...	57	14	37	27	...	...	1,195	617	1,022
1926	2,349,401	698	80	4,755	53	3,579	147	...	...	81	21	32	23	...	...	1,265	705	1,144
1927	2,401,884	460	68	8,369	113	4,059	179	...	...	25	4	25	10	3	27	1,158	632	1,056
1928	2,446,874	453	60	5,531	105	3,835	168	...	...	30	2	31	8	18	23	1,212	815	1,166

* Notifiable from 1st January, 1898.
† ” 23rd January, 1900.
‡ ” 1st February, 1912
§ ” 1st April, 1926.
‖ ” 11th October, 1915.
¶ ” 18th October, 1904, in the city of Sydney only; and under Public Health (Amendment) Act, 1915, from 11th August, 1915, in the Metropolitan and Hunter River Districts; from 2nd October, 1916, in the Katoomba Municipality and Blue Mountain Shire, and from 17th December, 1920, in the Blackheath Municipality. At time of writing it is not notifiable elsewhere in the State.

GRAPHS.

Annual Death-rate per 100,000 and case rate per 10,000 of population—

Typhoid Fever ... ... }
Scarlet Fever ... ... } 1898–1928
Diphtheria... ... ... }

Annual Death-rate per 100,000 of population in New South Wales... 1875-1928 (p. 10).

2. VENEREAL DISEASES ACT, 1918.

REPORT BY THE COMMISSIONER, Dr. ROBERT DICK, FOR THE YEAR ENDED 31st DECEMBER, 1928.

Notifications.—5,226 notifications of venereal disease were received during 1928, a decrease of 445 compared with 1927.

The 5,226 notifications received in 1928, comprise 1,255 cases of syphilis (males 899, and females 356); 3,715 cases of gonorrhoea (males 3,204 and females 511) and 256 cases of other forms of venereal diseases (males 252 and females 4). During the eight years the Venereal Diseases Act has been in operation the sex ratio of notified cases of syphilis has averaged about 2·98 males to 1 female case, the figures being 2·52 to 1 in 1928, 2·80 to 1 in 1927, 3·55 to 1 in 1926, with an average of 3 to 1 for the previous five years. There has been an alteration in the sex ratio of notified gonorrhoea cases. For the years 1923, 1924 and 1925 the average was 10 male cases to 1 female case. In 1926 it was 7·84 to 1, in 1927 7·3 to 1, and in 1928 it was 6·27 to 1. This reduction in the sex ratio incidence of cases of gonorrhoea in the past three years gives ground for belief that a greater proportion of infected females are seeking treatment.

Of the total notifications (5,226) received during 1928, 36 per cent. were forwarded by private medical practitioners, and 64 per cent. came from clinics, whereas in 1927 the figures were 37 per cent. and 63 per cent. respectively.

Failure to Continue Treatment.—The Act provides that if a patient has discontinued treatment his name and address must be forwarded by his medical attendant to the Commissioner in order that steps may be taken to secure resumption of treatment if possible.

During 1928 the names and addresses of 1,113 defaulting patients (males 833, females 280) were received. These defaulters were communicated with by letter, but, owing to wrong information having been supplied by them to their medical attendants in the first instance, no less than 602 of these letters were returned undelivered by the postal authorities. Of the remaining 511 defaulters, 441 resumed treatment, and as regards the balance (70 cases) follow-up proceedings were still being carried on, but were not finalised by the end of the year.

It will be noted that 21·3 per cent. of the 5,226 patients notified discontinued attendance before completing treatment. Of the total (1,113) defaulters 39·6 per cent. resumed treatment, and the remaining 6·2 per cent. had not been finally dealt with by the end of the year. For the past eight years the average of defaulters has been 23·4 per cent., and the average of letters returned undelivered has been 51·34 per cent.

Various reasons are given by patients for their having ceased treatment. Some discontinued because they are obliged to take up work in the country, some because they believe they are cured as there are no outward signs of the disease, and some because they are not satisfied with the treatment received. One large clinic in Sydney reports 64·89 per cent. defaulters amongst the cases presenting themselves for treatment.

There is much room for improvement in the majority of the clinics at present in operation. Where the service is unsatisfactory one cannot reasonably expect patients to be attracted to, or to continue attendance at, a clinic for treatment. The unsatisfactory arrangement at some of the clinics no doubt accounts to a considerable extent for the large percentage of defaulters.

Clinics.

Metropolitan District.—No additional clinics were opened in 1928. At present there are eight free clinics in operation, seven of which are in association with one or other of the public hospitals; at two of the clinics (Coast Hospital) syphilitic males only are treated. The clinic conducted at the Rachel Forster Hospital is for women and children only. This clinic is open every week-day and is being conducted by medical officers (female) on the staff of this department. From the figures given in Table 3 it will be seen that in comparison with 1927 there was a definite decrease (about 20 per cent.) in the number of new patients suffering from gonorrhoea treated at the clinics, and a slight increase (about 6 per cent.) in patients suffering from syphilis.

Attendances at the male clinics numbered 60,675 in 1927, and 62,996 in 1928, and increase of 2,321; at the clinics for women there was an increase of 4,062, the figures being 1927, 13,862 and 1928, 17,924.

The clinic provided at the Rachel Forster Hospital for Women and Children has maintained its high standard. The medical officer in charge of this clinic (Dr. E. J. Dalyell) reports as follows :

The attendances at the Venereal Diseases Clinics at the Rachel Forster Hospital, Redfern, Sydney were as follows :—

For gonorrhoea treatment	2,169
For syphilitic treatment	1,421
For blood tests (progress, 179; diagnosis, 340)	519
For bacteriological examination	304
Total	4,413

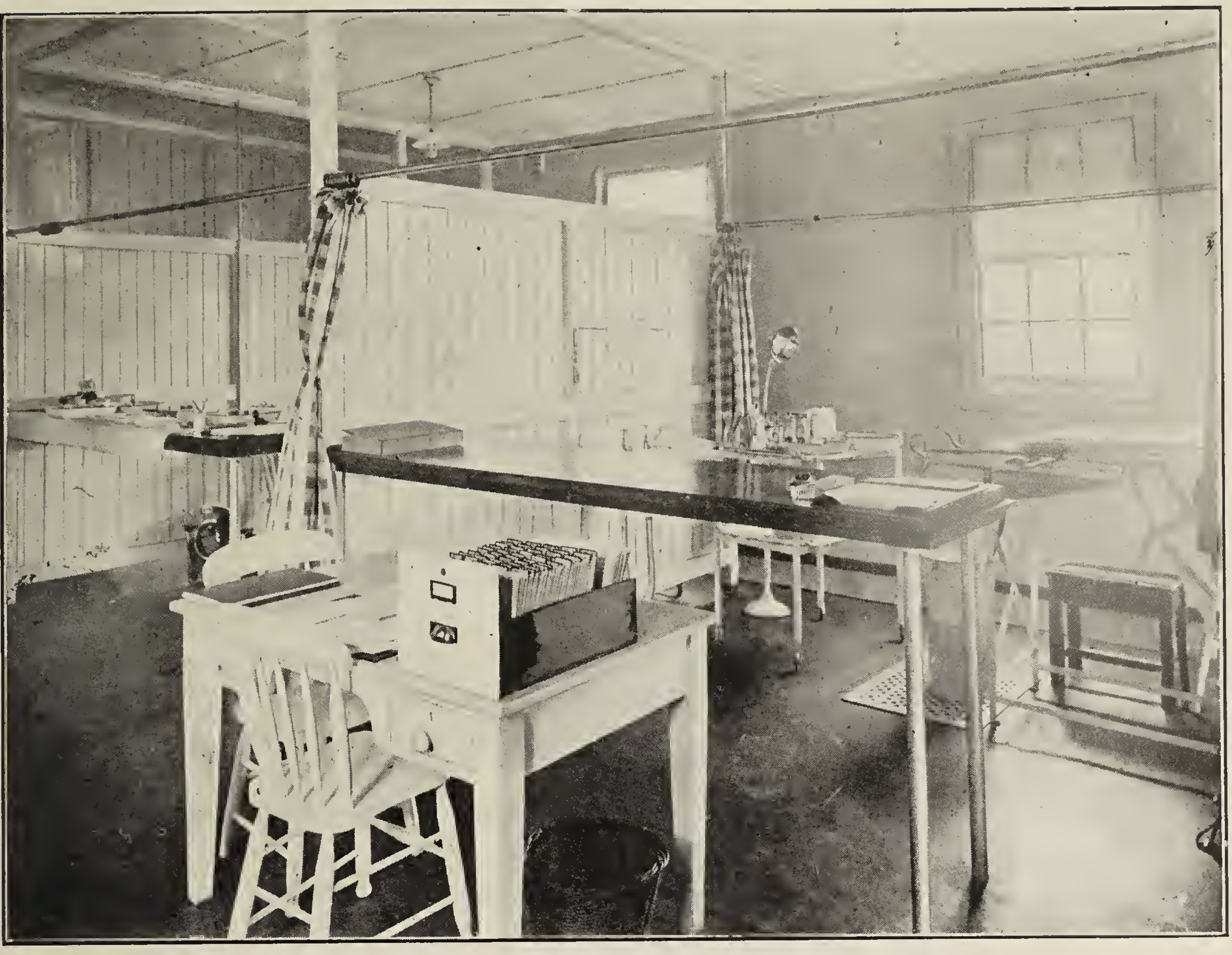
Number of syphilitic patients, 101 (remaining from 1927, 27; new cases in 1928, 74).

Number of gonorrhoea patients, 134 (remaining from 1927, 33; new cases in 1928, 101).

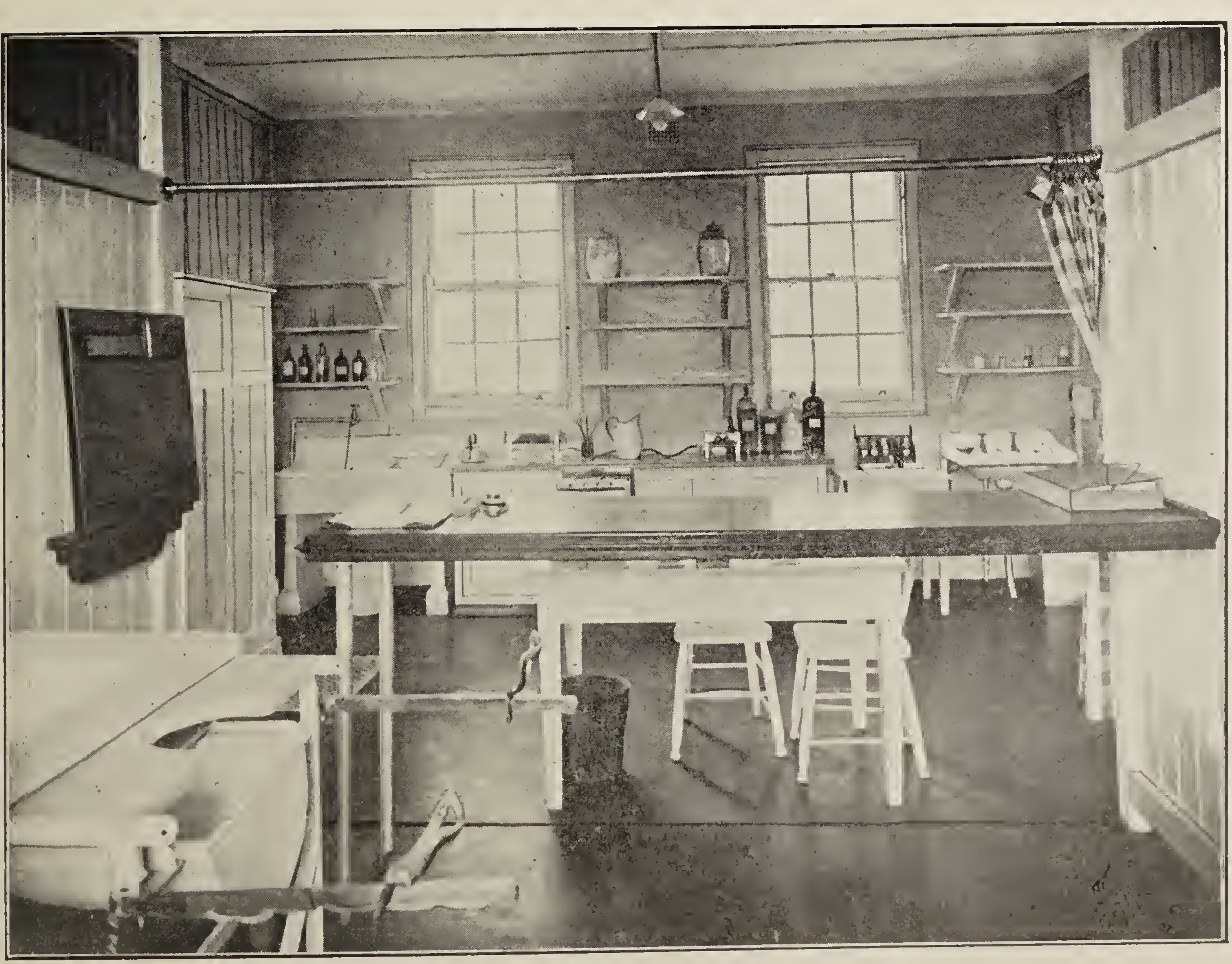
Cases seen for diagnosis, 402.

The clinic is open from Monday to Friday, inclusive, from 9 a.m. to 6 p.m., and on Tuesdays the period is extended to 9·30 p.m.

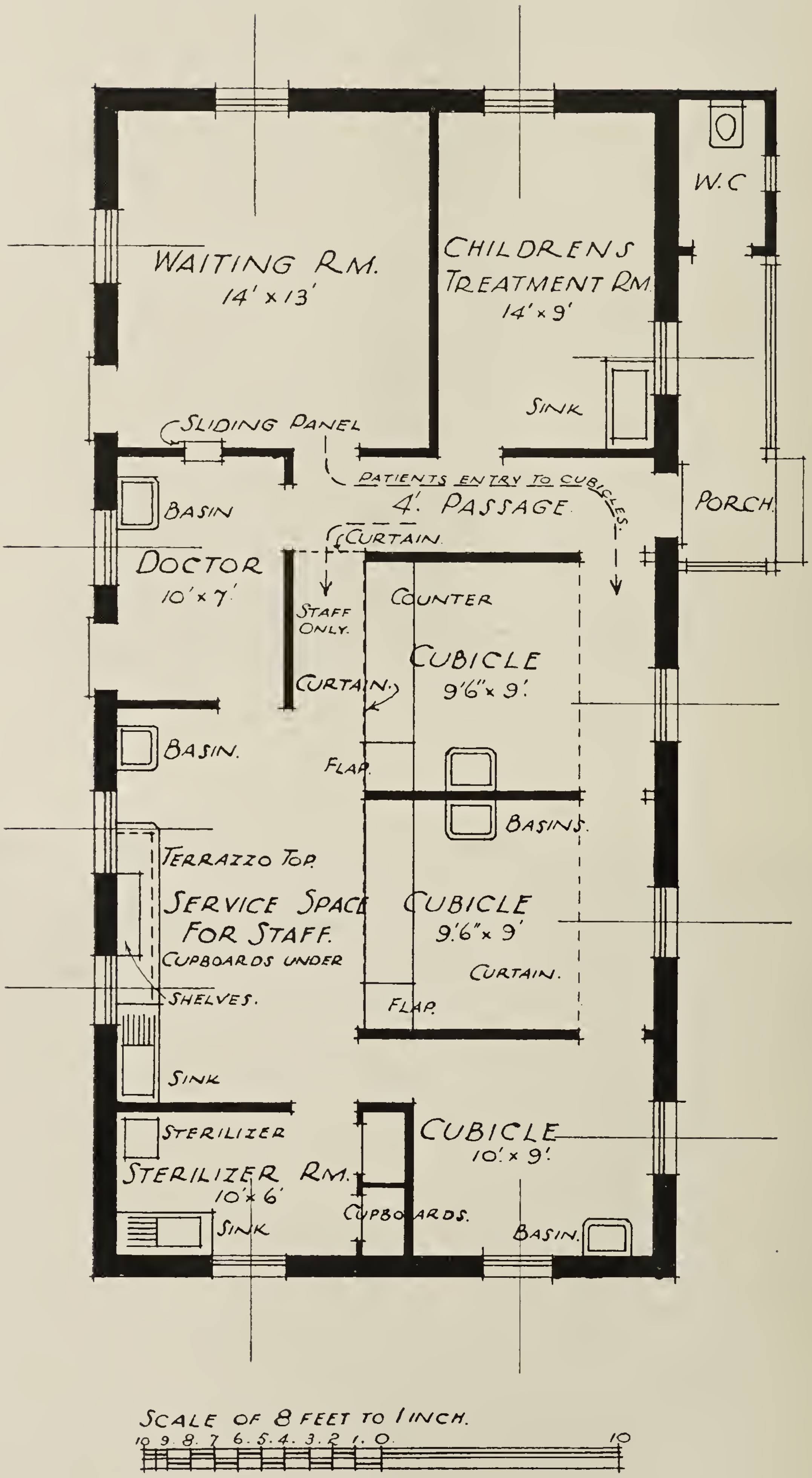
"*Organisation.*—The clinic is under the direction of two medical officers (Dr. Elsie Dalyell and Dr. Marie Hamilton) who are on the Laboratory Staff of the Department of Public Health. The medical registrar of the hospital assists at the various sessions. One full-time and one part-time nurse are attached to the clinic. The medical officer (Dr. Dalyell) who is in charge of the clinic, is an ex-officio member of the Hospital Committee.



Treatment Cubicles for Women, seen from the Staff Service Room.



View of Service Space for Staff, seen from one of the Treatment Cubicles.



Plan of V.D. Clinic for Women and Children, at the Rachel Forster Hospital, 195 George-street, Redfern.

> "This section of the hospital is always referred to as the "special clinic" to differentiate it from the other clinics for skin diseases, eye diseases, &c. As far as possible there is no delay in handling cases, and no overcrowding in the waiting room. All intravenous therapy is done in one room, intra-muscular injections in another room, and two rooms are reserved for examination and treatment of gonorrhoeal patients. One of the doctors in attendance discusses each new patient's case with her personally, and advises her regarding special details, such as examination of her children and of her partner, &c. Such personal concern and attention are found to be the best means to obtain the patient's confidence and ensure the prolonged attendance usually necessary.
>
> "Diagnosis and treatment are carried out in close collaboration with laboratory investigation. The difficulty of diagnosis and tests of cure in female cases make this essential if a patient's case is to be followed with precision.
>
> "The present building has proved admirably fitted for out-patient work. As the other hospital facilities are available for the clinic, no provision had to be made for dispensary, nurses' day room, or other offices, in the clinic building. Patients pass from the waiting room to cubicles, and out again by one route which does not encroach on the space allotted for doctors and staff. A plan of the clinic is appended, prepared by Mr. C. E. Kemmis, of the Government Architect's Department.
>
> "*Finance.*—The Government built the clinic with the proviso that the Hospital Committee accepted the liability for the cost of the building, should they discontinue the clinic. This liability diminishes 20 per cent. each year the clinic is in operation. The building cost £1,067 and complete equipment £400. The hospital receives a subsidy from the Government of £400 a year for maintenance of the clinic. Drugs are supplied free from the Government Stores Department, and the cost for the year ended 31st December, 1928, was £97 5s. 9d.
>
> "*Special Points.*—The clinic is a continuous one. The medical staff is composed entirely of women doctors, and as the clinic is controlled by medical officers of the Department of Public Health the work of the clinic is carried out in close collaboration with the Laboratory Division of the Department."

There is urgent need for a continuous full time clinic in the Metropolis to deal with males. With the exception of the Coast Hospital, which is some distance out of the city, there is no clinic in existence which gives this necessary service.

Newcastle.—Although plans have been prepared for a new building to house a clinic for the treatment of venereal diseases, a start has not yet been made to erect such building. The establishment of modern facilities for the control and treatment of verereal diseases in the Newcastle District is a matter of urgency. The Federal Government has agreed to pay one half the cost of the construction of that portion of the building which is to be used as a clinic, and to contribute towards the annual maintenance of the clinic.

Bed Accommodation.—The bed accommodation for males at the Coast Hospital has been increased from 50 to 91 beds. There are also at other institutions 29 beds for females and 15 for children. It is not uncommon for country hospitals to seek admission into metropolitan hospitals for any patient with venereal disease requiring indoor treatment. The department does not favour the transference of such patients from the country except under special circumstances. Any drugs necessary for the treatment of venereal disease cases are supplied free of charge to country hospitals on request.

Expenditure.—The Federal Government contributed £4,500 towards the expenditure incurred in 1928 in connection with venereal disease. There has been a steady increase in expenditure. In 1926 it was £24,634, in 1927, £28,581, and in 1928, £31,275.

Pathological Examinations.—Table 2 (b) shows the marked increase in the use made of laboratory tests for diagnostic purposes and progress reports during treatment. In 1928, 21,263 serological tests were made on 9,072 specimens compared with 15,655 in 1927 on 7,300 specimens. In 1927, 3,928 smears were examined for detection of gonococci, and in 1928, 4,669, an increase of 18·8 per cent.

Director, Division of Venereal Diseases.—In August applications were called for the position of Director, Division of Venereal Diseases. Candidates were interviewed in September, and it is expected that the new Director will take up his duties early in 1929.

Following on this appointment it will be possible to carry out very much more active work in this branch of the Department's activities. It is anticipated that as this newly appointed director has had wide clinical experience in this special field it will be possible to utilise his services in connection with the Departmental clinics in addition to the carrying out of purely administrative duties.

Prosecutions.—There were three prosecutions under the Venereal Diseases Act during the year, viz.—

Section 3.—Action was taken against a chemist for selling a proscribed drug. Fined £3 and £2 8s. costs.

Section 21.—Action taken against a person for knowingly infecting with venereal disease. Case dismissed.

Section 25.—Action taken against a person for publishing a statement for the relief of female irregularities. Fined £5 and 8s. costs.

Educational Propaganda.—The Department possesses the following films dealing with venereal disease and sex hygiene :—" Gift of Life," " Social Hygiene for Women," " Waste," " Memories," " The Flaw," " Whatsoever a Man Soweth," and " Well-born." These films continue to be extensively used in conjunction with addresses and lectures. Leaflets are distributed and posters kept displayed in public lavatories throughout the State. The members of the Racial Hygiene centre and of the " Fathers and Sons Welfare Movement," have again been of considerable assistance to the Department in organising meetings, displaying films, and distributing literature.

The following tables are appended :—

Table 1.—Notifications received during years 1926–1928 arranged in order of district from which notification received.

Table 2.—Notifications received during 1928, showing (*a*) forms of disease and age and sex of patients notified; and, (*b*) diagnostic examination in Microbiological Laboratory, 1926–28.

Table 3.—Summary of annual attendance at Public Clinics, 1927–28.

TABLE 1.

Notifications received during years 1926-1928, arranged in order of districts.

	Metropolitan Area.			Newcastle District.			Remainder of State.		
	1926.	1927.	1928.	1926.	1927.	1928.	1926.	1927.	1928.
Gonorrhœa	4,160	3,884	3,487	48	39	22	283	211	206
Syphilis	1,128	1,190	1,180	9	9	12	42	58	63
Soft chancre	50	31	24	...	...	...	1	3	3
Gleet	257	237	210	...	...	...	3	3	3
Venereal warts	12	6	11	...	...	...	...	...	1
Gonorrhœal ophthalmia	5	1	2	...	1	...	1	...	1
Venereal granuloma	2	...	1	...	...	...	...	1	...
Total	5,614	5,349	4,915	57	49	34	330	276	277

TABLE 2 (a).—Return of cases of Venereal Disease notified during 1928, showing forms of disease, and age and sex of patients.

	0 to 5		6 to 10		11 to 15		16 to 20		21 to 25		26 to 30		31 to 35		36 to 40		41 to 45		46 to 50		Over 50		Age not Stated.		Total.		Total.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Gonorrhœa	4	28	3	19	18	25	509	188	988	134	730	51	348	25	260	15	149	13	87	1	86	7	22	5	3,204	511	3.715
Syphilis	20	16	16	13	9	11	79	48	181	64	167	53	93	51	120	38	73	24	44	20	88	10	9	8	899	356	1,255
Soft chancre	...	...	...	...	...	...	2	...	9	...	4	1	3	...	3	...	3	...	2	...	...	...	...	...	26	1	27
Gleet	...	...	...	...	...	...	11	...	48	...	56	...	38	...	27	...	14	1	9	...	6	...	3	...	212	1	213
Venereal warts	...	...	...	...	...	...	5	...	4	...	2	...	...	...	1	...	...	...	...	...	...	...	...	...	12	...	12
Gonorrhœal ophthalmia	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	2	3
Venereal granuloma	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	1
	25	46	19	32	27	36	606	236	1,230	198	959	105	482	76	411	53	240	38	142	21	180	17	34	13	4,358	871	5,226

TABLE 2 (b).—Diagnostic examinations for Venereal Diseases made in the Microbiological Laboratory during the years 1926–1928.

Year.	Gonorrhœa. (Smears and Urine.)	Gonorrhœa. (Complement Deviation Test.)	Syphilis. (Wassermann Reaction.)	Syphilis. (Kahn's test.)	Syphilis. (Smears for Spirochætes.)
1926	3,372	2,145	6,002	3,464	11
1927	3,928	2,726	7,300	5,629	16
1928	4,669	3,811	9,072	8,380	36

TABLE 3.—Summary of Annual Attendance Returns at Public Clinics for treatment of Venereal Diseases, 1927–1928.

Year Ended.	Attendances.			New Cases.					
				Gonorrhœa.			Syphilis.		
	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.
Royal Prince Alfred Hospital.									
31 Dec., 1927 ...	28,096	6,673	34,769	629	189	818	181	81	262
31 ,, 1928 ...	28,765	6,924	35,689	557	162	719	160	62	222
Sydney Hospital.									
31 Dec., 1927 ...	16,718	2,827	19,545	947	61	1,008	208	62	270
31 ,, 1928 ...	15,729	3,764	19,493	595	80	675	192	90	282
Royal Alexandra Hospital for Children.									
31 Dec., 1927 ...	636	1,406	2,042	4	35	39	24	42	66
31 ,, 1928 ...	1,173	2,231	3,404	...	23	23	25	51	76
Royal South Sydney Hospital.									
31 Dec., 1927 ...	1,763	241	2,004	82	1	83	28	14	42
31 ,, 1928 ...	2,261	357	2,618	95	10	105	19	11	30
Royal North Shore Hospital.									
31 Dec., 1927 ...	4,055	1,315	5,370	63	24	87	24	12	36
31 ,, 1928 ...	3,730	1,897	5,627	83	17	100	30	19	49
Coast Hospital Night Clinics for Syphilis (Men Only). 1. *Hospital Admission Depot, Head Office (Coast Hospital Staff).* *Clinic first opened in August, 1924.*									
31 Dec., 1927 ...	7,936	...	7,936	...	...	...	448	...	448
31 ,, 1928 ...	9,209	...	9,209	...	...	...	498	...	498
2. *Coast Hospital, Little Bay.* *Clinic first opened 29th June, 1925.*									
31 Dec., 1927 ...	1,471	...	1,471	...	...	...	...	...	...
31 ,, 1928 ..	2,129	...	2,129	...	...	...	...	...	...
Rachel Forster Hospital for Women and Children. *Clinic first opened in 1923.*									
31 Dec., 1927 ...	...	1,400	1,400	...	60	60	...	24	24
31 ,, 1928 ...	...	4,413	4,413	...	101	101	...	74	74

SECTION I—D.

TUBERCULOSIS DIVISION.

REPORT OF ACTING DIRECTOR TO 31st DECEMBER, 1928.

Staff.

Director : H. V. D. Baret, B.A., M.B.; 1 clerk; 4 visiting nurses.

I have to report as follows on the work of the Tuberculosis Division for 1928.

Co-operation.—With the active functioning of the Board of Control of the campaign against tuberculosis co-ordination of the various anti-tuberculosis associations is making satisfactory progress. This co-ordination was begun in 1927, and was steadily continued during 1928. It has now reached a high degree of efficiency, although much more can still be accomplished. It is especially desirable that there should be closer co-operation with private practitioners, private sanatoria, and the Relief Section of the Chief Secretary's Department, and this is expected in the near future.

Notifications.

The Public Health Amendment Act, 1915, requires notification of cases of pulmonary tuberculosis occurring in the Metropolitan or Hunter River Combined Districts to be made to the medical officers of health for these districts, and elsewhere in the State to the Secretary of the Board of Health. 1,212 notifications were received during 1928, of which 1,060 were from the Metropolitan District, an increase of 72 on the figures for 1928; of the remaining 152, 62 were from the Hunter River District and 90 from the Blue Mountains area, which is the only other portion of the State in which tuberculosis has hitherto been notifiable. The following table shows the age and sex incidence of the 1,212 notified cases.

Age Period.	Metropolitan Combined District. Population—1,291,740.			Hunter River Combined District. Population—199,910.			Blue Mountains District. Population—20,310.			Whole State. Population—2,446,874.		
	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.
0– 4 years	1	1	2	...	...	...	...	...	...	1	1	2
5–14 ,,	8	4	12	...	...	...	...	...	...	8	4	12
15–24 ,,	89	129	218	4	7	11	6	12	18	99	148	247
25–34 ,,	136	127	263	7	7	14	17	15	32	160	149	309
35–44 ,,	152	83	235	4	7	11	22	4	26	178	94	272
45–54 ,,	132	24	156	3	8	11	6	4	10	141	36	177
55–64 ,,	58	18	76	3	3	6	1	1	2	62	22	84
65 and over	41	14	55	3	...	3	...	1	1	44	15	59
Age not stated	40	3	43	5	1	6	1	...	1	46	4	50
All Ages	657	403	1,060	29	33	62	53	37	90	739	473	1,212

There were 1,317 deaths from all forms of tuberculosis in 1928, viz:—Tuberculosis, respiratory system, 1,166; meninges and nervous system, 52; other, 99.

Of the 1,166 deaths from pulmonary tuberculosis, 587 occurred in the metropolitan area.

District Registrars are under a statutory obligation to report every registered death from pulmonary tuberculosis in those parts of the State where the disease is notifiable. That this duty has been neglected by some registrars is evident from the fact that notices were received of only 462 of the 587 deaths registered from this form of tuberculosis in the metropolitan area, and action is being taken to secure a stricter observance of the law.

Decline of Deaths from Tuberculosis.

The figures available up till the end of 1928 indicate that the death-rate per million of population from tuberculosis in all forms is still declining. Reference to Graph 1 will show that this decline has been practically continuous since 1885, the general trend downwards being remarkably uniform.

Institutional Accommodation.

The list below shows the number of institutional beds at present available for the treatment of tuberculous patients. This list and the following instructions regarding admission should prove useful to medical practitioners.

Sanatoria and Hospitals.	Type of Cases Received.	Number of Beds.		
		Males.	Females.	Total.
1. Waterfall Sanatorium (under Government control)	Intermediate	293	124	417
2. Randwick Auxiliary Hospital (under Government control)	Late	60	...	60
3. Queen Victoria Homes (subsidised)—				
Thirlmere	Early female	...	54	54
Wentworth Falls	Early male	54	...	54
4. Red Cross Society (subsidised)—				
" Bodington "	Early male and female	...	...	98
" Malahide "	Late male and female	...	...	21
" Southern "	Male quiescent	20	...	20
(The above institutions work in full co-operation with the Tuberculosis Division.)				
R. T. Hall Sanatorium	....	8	8	16
Private Hospitals (approximately)	....	...	...	40
Repatriation Department—				
Prince of Wales Hospital	....	65	...	65
Lady Davidson Home	....	77	...	77
				922

Admission to Institutions 1–4 on the above list is arranged by application to the Director, Tuberculosis Division, 5 Richmond Terrace, Domain, Sydney. Applicants for admission to sanatoria should apply personally at this office between 9 and 12, Monday to Friday inclusive, bringing with them a note from their medical adviser giving the clinical findings and results of sputum and X-ray examinations.

The Board of Control of the campaign against tuberculosis requires that no patient shall be admitted to a sanatorium unless either sputum or X-ray examination gives a positive result.

Country cases are also admitted to sanatoria through the Director of Tuberculosis. It is considered that hopeless cases resident in the country should be cared for in their local hospital. Country patients suitable for admission to sanatoria are required to fulfil the following conditions :—

They should—

(*a*) Have result of sputum examination.
(*b*) ,, ,, of X-ray examination, where possible.
(*c*) ,, a reasonable prospect of arrest of the disease.
(*d*) Be afebrile for at least a fortnight prior to removal.
(*e*) Not need to be provided with an escort except in the case of children.

Application forms for the admission of country patients to sanatoria can be obtained at the office of the Director of Tuberculosis.

All the sanatoria listed above work in full co-operation with the Tuberculosis Division.

The Red Cross sanatorium, " Bodington," and the two Queen Victoria Homes are for patients suffering from the disease in the early stages. There is an obvious difficulty in comparing their results—a difficulty which will be removed shortly by a standardisation of annual reports. Despite all that is done by the dispensaries in the way of examining contacts, &c., early cases are not yet found in sufficient numbers to tax the resources of these sanatoria and the term " early case " has had to be interpreted rather liberally.

The report of Waterfall Sanatorium, where patients in an intermediate stage of the disease are accommodated, will be found on page .

All the sanatoria carry out the same stereotyped treatment by rest and graduated walks. There is no system of graduated work in any of them, and none carries out treatment by artificial pneumothorax. An X-ray plant will be soon provided at the Waterfall Sanatorium, which will enable a great amount of scientific work to be undertaken in the way of further investigation of patients, and of treatment by pneumothorax. On account of the difficulty of obtaining resident medical officers, the Red Cross and the Queen Victoria sanatoria are looked after by visiting medical officers, and though the work done by these officers is excellent, a resident medical man is considered essential. Present circumstances seem, however, to preclude this.

Dispensaries.

A table showing the work of the various anti-tuberculosis dispensaries is given below.

A marked increase is shown in practically every item compared with the figures for 1927. The increase is, no doubt, due to the additional visiting nurses, and to the fact that all these organisations are represented on the Board of Control.

COMPARATIVE TABLE, SHOWING WORK DONE AT THE VARIOUS ANTI-TUBERCULOSIS DISPENSARIES.

	Royal Prince Alfred Hospital.		Royal North Shore Hospital.		National Association for the Prevention and Cure of Consumption.		Newcastle Throat and Chest Dispensary.	
	1-7-26—30-6-27.	1-7-27—30-6-28.	1927.	1928.	1927.	1928.	1927.	1928.
Patients in attendance	981	1,247	352	309	249	811	...	...
Total attendances	3,917	4,700	1,089	1,245	4,099	5,336	356	362
New patients	343	425	125	164	222	667	56	61
Contacts examined	293	361	42	60	26	214	...	...
Old patients who attended during year	...	...	104	168	27	144	...	...
Deaths	70	62	14	13	5	32	...	...
Sputa examined	355	501	97	102	74	476	18	25
Number of nurses' visits	1,603	1,774	3,404	3,265	455	1,760	...	...
Number of homes visited	808	810	203	236	282	320	...	...
Sent to sanatoria	98	117	17	19	15	28	10	8
Sent to hospitals	40	58	18	22	5	28	Nil,	9
Sent to country	97	108	16	14	7	3	Nil.	Nil.

Visiting.

In the metropolitan area, visiting of notified cases is undertaken by the nurses of this division, and in the Newcastle district by a nurse attached to the staff of the Medical Officer of Health.

The scope of the visiting operations was much enlarged by appointment of two additional nurses to this staff, making a total of four nurses now available. Many more are necessary in the metropolitan area to ensure adequate visiting of all tuberculous families, and a request has been submitted for appointment of five additional nurses.

The four nurses at present employed made 3,138 visits to the homes of 817 tuberculous patients 2,033 visits were to patients attending the anti-tuberculosis dispensaries, and 1,105 to non-dispensary patients. The average number of visits to each patient per year was 3·8. It is thus seen that there is still much room for improvement in this direction.

Visiting is also carried out by the four nurses employed at the dispensaries at the Royal Prince Alfred and the Royal North Shore Hospitals. The number of visits made by these nurses during the past year was 5,039. The visits were made to the homes of 1,046 patients, thus the average number of visits per patient per year was 4·8

Of the four Departmental nurses, one assists at the Anti-Tuberculosis Dispensary at Royal Prince Alfred Hospital, a second visits for the National Association for the Prevention and Cure of Consumption, and the remaining two visit non-dispensary cases. Such visiting as they may perform is obviously insufficient when the total number of patients is taken into consideration. Including the nurses of the anti-tuberculosis dispensaries, the total number of visiting tuberculosis nurses is nine for the whole of New South Wales, and the total number of patients (at time of writing, March, 1929) on our incomplete register is 6,248. This gives an average of one nurse to about 700 patients. It would be impossible for the present staff of nurses to visit more than a proportion of these cases.

The best means of teaching a patient how to care for himself and to protect others is by sending him to reside in a sanatorium for a time. It is the experience of the visiting nurses that the sanatorium-trained patient usually, but not always, is careful in his family circle, though he may overlook details.

It is impossible for many reasons for all patients to be sanatorium-trained, and those who have not passed through this routine are more difficult to educate, and frequent visits and advice are necessary, It is for this reason that an augmented staff of visiting nurses is necessary.

Statistics.

The following figures have been extracted from the Register of Tuberculous Cases.

Since the inception of this Division on 1st July, 1927, until 31st December, 1928, the names and particulars of 4,948 tuberculous cases have been recorded, and below is a summary of the information available concerning them.

Table showing the Age Groups, Nativity, Sex, Conjugal Condition and source from which particulars were obtained of the 4,948 cases recorded in the Tuberculosis Division from its inception on 1st July, 1927, to 31st December, 1928.

Age Groups.		Nativity.		Sex.		Conjugal Condition.		Particulars Supplied by.	
0–4 years ...	47	Aborigines (Australian)	13	Males	3,235	Unmarried	1,582	Dispensaries	1,247
5–9 ,, ...	119	Australian born	2,213	Females ...	1,642	Married ...	2,029	Hospitals	502
10–19 ,, ...	418	Others, white	919	Not stated	71	Widows ...	52	Medical practitioners.	667
20–29 ,, ...	942	Others, coloured	15			Widowers	80	Sanatoria	926
30–39 ,, ...	1,302	Not stated	1,788			Not stated	1,205	Repatriation Dept.	593
40–49 ,, ...	956							Red Cross Society	462
50 and over...	839							Visiting nurses ...	145
Not stated ...	325							Death notices	95
								Other sources	311
	4,948		4,948		4,948		4,948		4,948

Of the 4,948 cases, 918 (males 607, females 311) were deceased on the 31st December, 1928, leaving 4,030 patients on the register of this division.

The age groups at death of the 918 deceased patients are shown hereunder :—

Age at Death.	M.	F.	Total.	Age at Death.	M.	F.	Total.
0–4 years..............................	3	9	12	30–39 years..............................	126	71	197
5–9 ,, ...	3	5	8	40–49 ,, ...	162	34	196
10–19 ,, ...	12	30	42	50 and over..............................	187	38	225
20–29 ,, ...	95	118	213	Not stated	19	6	25
	113	162	275	Total	494	149	643

The Board of Control of the Campaign against Tuberculosis.

During the year, 1928, the Board of Control met on nine occasions. Many important aspects of the campaign against tuberculosis have received the consideration of the Board, and a number of resolutions have been passed and put into effect for the good of tuberculosis patients and their families, and to generally combat the disease.

The following is a brief summary of some of the more important matters dealt with :—

(1) Consideration was given to the question of the most suitable and efficient method of the examination classification and admission of patients to the various sanatoria and hospitals for the treatment of tuberculous patients.

A scheme was decided upon and put into effect. It has been found in practice to function very well.

(2) A sub-committee was appointed to consider the question of the equipment and functions of an ideal anti-tuberculosis dispensary.

Its report was adopted by the Board and copies forwarded to each of the anti-tuberculosis dispensaries. Sydney Hospital and Newcastle Hospital were each urged to establish a dispensary on the lines indicated in the report, but as yet negotiations have not been finalised.

(3) A recommendation was made to the Government that provision be made for 200 additional beds for patients, and it was suggested that the Sydney, Royal Prince Alfred, Royal North Shore, Coast and Newcastle Hospitals should each reserve 30 beds (15 male and 15 female) for tuberculous cases. Negotiations in this direction have, however, failed to materialise.

(4) On the recommendation of the Board, a subsidy of £100 per bed per annum is being paid by the Government to the Red Cross Society for the maintenance of 30 beds at " Bodington " and 20 beds at Exeter.

(5) Care of the family of the consumptive was very fully considered, and investigations are now being made to ascertain what sum of money would be needed to cover the cost of this service.

(6) The Board recommended to the Government that notification should (*a*) be compulsory over the whole State; (*b*) include all forms of tuberculosis; and (*c*) be made to a central authority.

The second and third items will involve an amendment of the Public Health Acts, but the first can be effected by proclamation, which it is expected will be issued early in 1929.

(7) A sub-committee was appointed to consider the equipment of sanatoria.

The recommendations contained in its report are being put into operation as far as practicable by the interested parties.

(8) The Board had under consideration the question of promiscuous spitting and the isolation of the incorrigibly careless patient.

A recommendation was made that regulations be framed to deal with this, but action must wait the amendment of the Public Health Acts.

(9) The Board affirmed the need for provision of summer camps and preventoria for mal-nourished and pre-tubercular children.

(10) A sub-committee has at present under consideration the question of the standardisation of dispensary records, &c.

(11) The Board also considered the question of publicity methods and educational propaganda. It was decided that use should be made of radio, pamphlets, window exhibits, &c. A local film is being prepared depicting the activities of the various sanatoria and dispensaries.

(12) Investigations were made into the methods of disposal of sputum at present in operation at sanatoria.

(13) The Board affirmed the need of full-time tuberculosis officers at the dispensaries, and the Commonwealth Government has been asked to indicate to what extent it would be prepared to aid financially in this matter.

(14) On the recommendation of the Board, the Government guaranteed the sum of £1,500 towards the installation of electric light and water supply at the Picton Lakes Village T.B. Settlement.

GENERAL.

Many instructive talks on tuberculosis have been broadcast, and it is probable that many persons have been reached by this means who could not otherwise have been got into contact with.

The Picton Lakes Village T.B. Settlement.—It is expected that this scheme will be put into operation shortly, and its progress will be watched with interest.

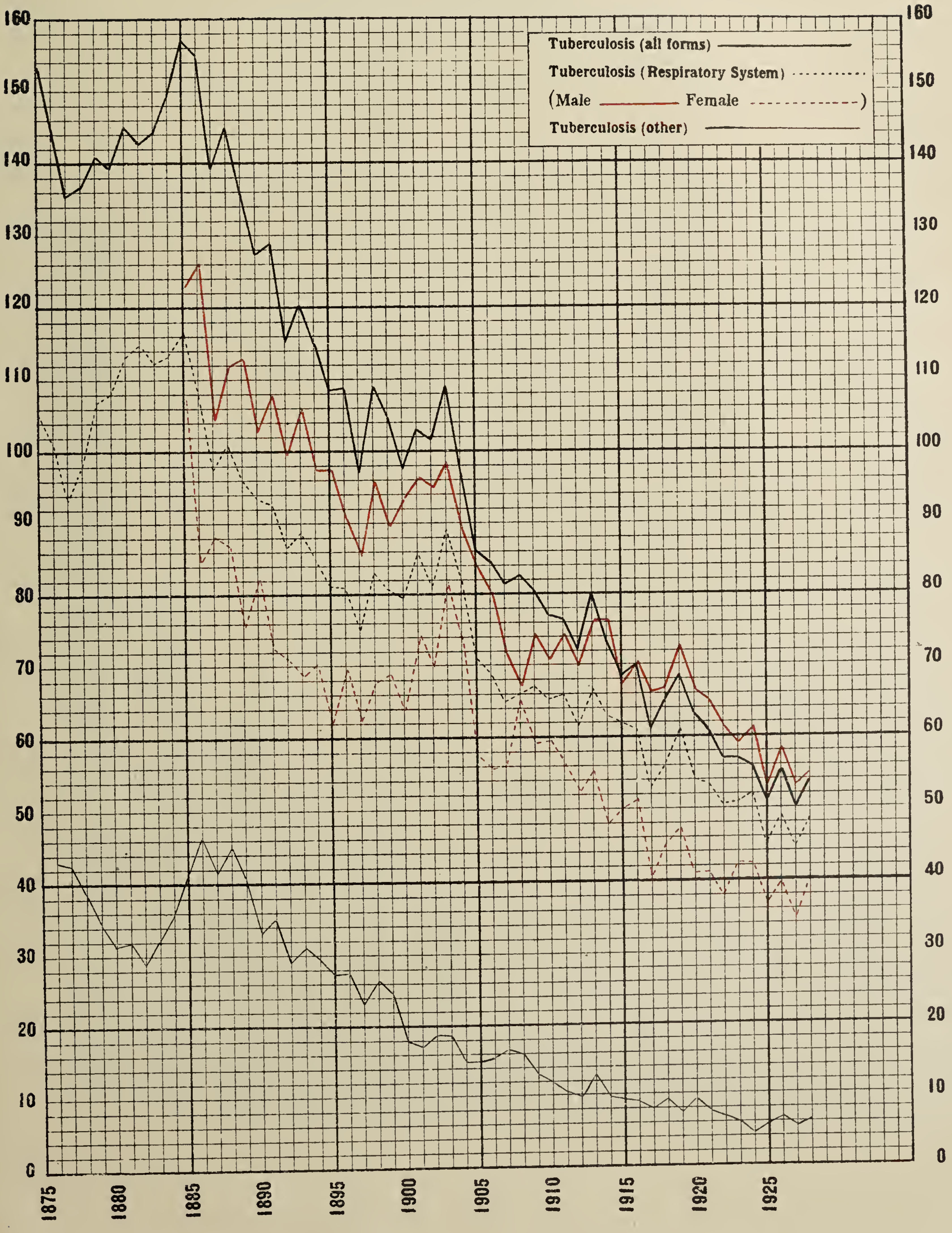
GRAPHS.

1. Annual Death-rate from Tuberculosis per 100,000 of population in New South Wales, 1875–1928.
2. Total Deaths from some of the Principal Diseases, New South Wales, 1928.

TUBERCULOSIS.

Graph I.

ANNUAL DEATH RATE PER 100.000 OF POPULATION IN NEW SOUTH WALES, 1875-1928.

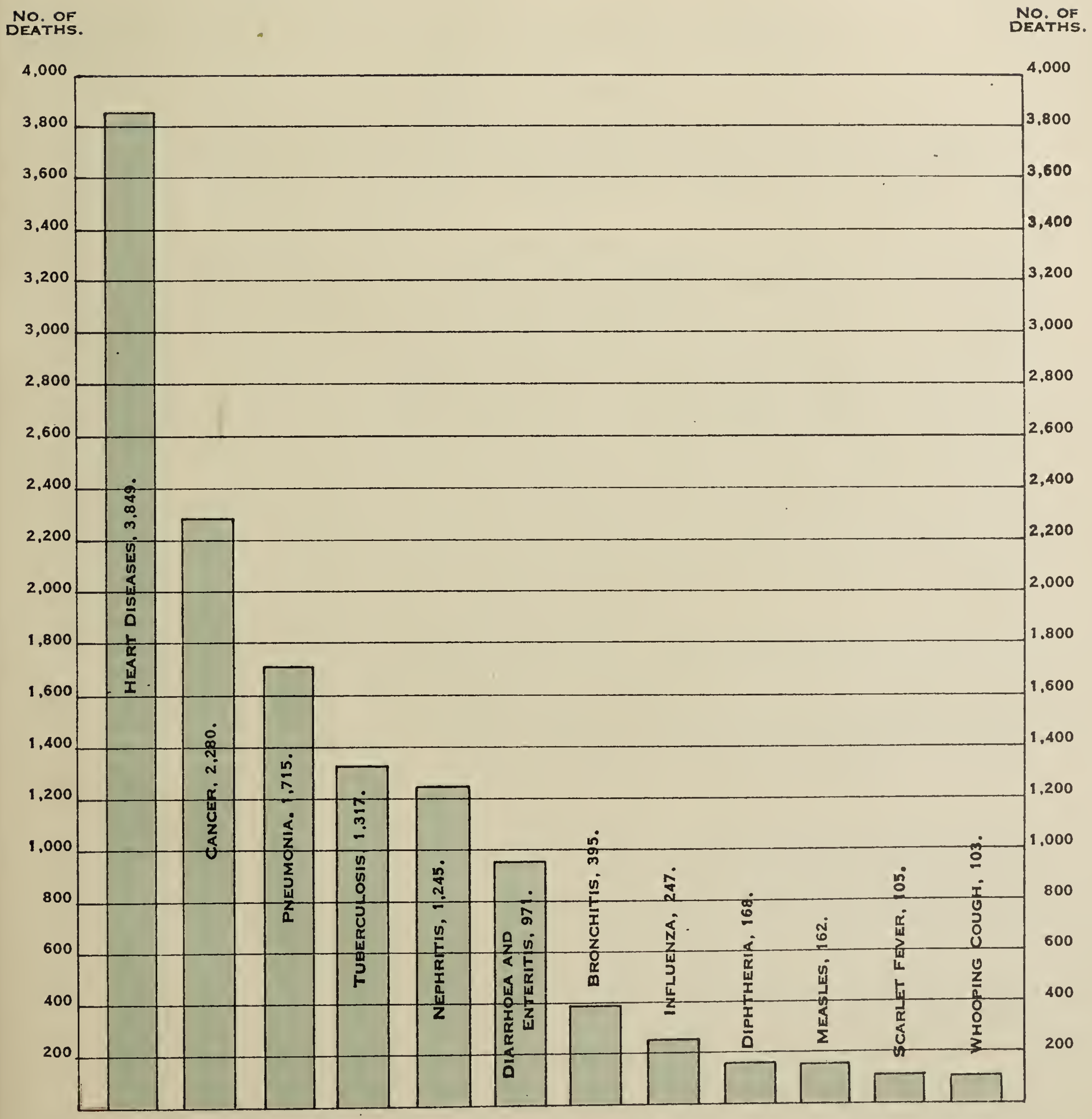


TUBERCULOSIS.

Graph 2.

NEW SOUTH WALES, 1928.

Total Deaths from Some of the Principal Diseases.



Studies in Industrial Hygiene, No. 15.

How to Improve Atmospheric Conditions in Textile Mills.

By Charles Badham, Medical Officer of Industrial Hygiene, H. E. G. Rayner, Physicist Assistant, and H. D. Broose, Engineer Assistant, of the Division of Industrial Hygiene, New South Wales.

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Section I.—Introduction.

Any review of the atmospheric conditions of textile mills, unless it be but a short note, must take account of a great deal of work which has been done in England during the last half-century in the cotton, wool, silk, flax, and jute mills, and when this literature has been collated, the conviction will be left that in Australia we have to take up the problem of the atmospheric conditions of textile mills at the stage where it is left by English investigators.

The English problem occurs when the shed temperatures exceed 80 deg. F. Our problem comes when the outside temperature exceeds 80 deg. F. In our community, which is 98 per cent. British, we boast that while the stars have changed the spirit remains the same, provided, however, that the bodily reactions to higher temperatures have also changed and acclimatisation is a definite force; then we may expect to find our textile mills comfortable or tolerable, otherwise not. We may, however, turn to India, and from the valuable report of Maloney (1923) find described the conditions of textile mills in a country where the climate approaches our Australian climate, but is now more torrid and now more humid. We may fairly compare the Sydney summer temperatures to the winter temperatures of certain Indian zones and note with interest how the atomising of water in the torrid periods reduces the dry bulb temperature of the mills. The spinning sections of the cotton mills of India show the same relative increases of temperature as they do in our worsted processes. Our textile buildings are rarely as well protected from solar heat as the Indian mills. Our work in the textile mills has been along the same lines as Maloney's and we stress with him the need for lower mill temperatures and higher air movements. The conditions of English cotton textile mills have been dealt with by a Departmental Committee in 1911 and 1928, and by Wyatt and Dearden among others. To the antipodal mind it would appear that the Indian mills, despite severe climatic handicaps, have overcome these better than the English mills, which are more favourably placed. The Departmental Committee of 1928 quotes Rubner :—

> " Every hindrance to heat loss either reduces bodily exertion or causes the exertion to be done under a feeling of oppression and a burden of weariness. Therefore the production of sweating must be energetically countered by adequate conditions of environment.
>
> " Many weaving sheds do not furnish these conditions. Temperature throughout the year is well above 60 deg. F. (except in the early morning), and during the day in a hot summer may reach 80 deg., 85 deg. (dry bulb), and even higher. The relative humidity is high in sheds which work close to the limits allowed by the present Regulations; and the average air movement, from observations taken by Mr. Wyatt, is low."

The spinning rooms of the cotton mills require a dry bulb temperature of from 70 deg. to 90 deg. F., according to the counts spun, and a relative humidity of 50 per cent. The optium temperature for cotton weaving was found by Wyatt to be, dry bulb 75 deg. F., wet bulb 70 deg. F, relative humidity 80 per cent. Dearden in his account shows in certain mills the presence of dry bulb temperatures from 83 deg. to 90 deg. F. in the spinning rooms throughout the year, with a relative humidity of from 40 to 50 per cent. Both Dearden and the 1928 Committee recognised the value of Maloney's and Wyatt's work in humid mills on the amount of air movement required, but the 1928 Committee stated :—

> " *Cooling Power and Air Movement.*—We are satisfied that much may be done to improve conditions in the hotter sheds by increasing the cooling power of the air, and that it is extremely unlikely that the localised increase in air movement necessary to bring this about would be followed by any deleterious effects on the process of manufacture.
>
> " At the same time the formulation of any standard in terms of cooling power as measured by the kata-thermometer offers certain difficulties and the evidence of Dr. Vernon and the views of Dr. Leonard Hill (a member of the Committee and the inventor of the instrument) are against the fixing of such a standard in our present state of knowledge.

> "In the meantime we would strongly urge those firms who find difficulty in maintaining reasonable conditions to experiment themselves with paddles or other means of moving the air. Generally speaking, this would only be required during the period, 31st May to 15th September, though, in a few hot sheds, these limits could be extended with benefit.
>
> "It may be argued that, in view of the further restrictions on artificial humidification now proposed, such provision would be unnecessary. We would, however, point out that, although we recommend that artificial humidification should cease at 72½ deg. F., in hot weather the wet bulb temperature will still rise, and it is in these cases that the provision of air movement will be of most benefit."*

This opinion of Dr. Leonard Hill and Dr. Vernon will cause hesitation in adopting any standards of cooling power as measured by the kata-thermometer, but our considered opinion (which tallies with the opinions of Maloney and Wyatt, who have carried out practical work in mills in India and England) is that for our conditions there is no difficulty in fixing and applying such standards. We desire to measure air movement and no other instrument is available to us. The present instrument may not have been perfected, but it has been subjected by many hands to numerous practical tests. While aware that the Australian States have acquired the reputation of being social laboratories, and that we may more easily adopt and discard regulations and standards owing to the greater flexibility of our smaller industrial activity, still we maintain that without a standard of air movement we cannot achieve conditions which are tolerable or comfortable in our factories or theatres, and there is no course available to us but to use the best instrument we have, to measure air movement. The recent work of Mavrogordato and Pirow in South African mines shows the need for such a course.

The Factory Regulation No. 6, which governs the question of humid conditions in our buildings, reads :—

> "In every factory the means of ventilation, warming and cooling, to be provided and maintained, shall be such as to keep the humidity and temperature of the air during working hours within the following proportions of temperature in relation to moisture, viz. :—

Dry bulb thermometer showing air temperature in degrees Fahrenheit.	Corresponding wet bulb thermometer showing humidity in air.		Dry bulb thermometer showing air temperature in degrees Fahrenheit.	Corresponding wet bulb thermometer showing humidity in air.	
	Minimum Fahrenheit.	Maximum Fahrenheit.		Minimum Fahrenheit.	Maximum Fahrenheit.
40 degrees	35 degrees	37 degrees.	85 degrees	68 degrees	73½ degrees
50 ,,	44 ,,	47 ,,	90 ,,	69½ ,,	74 ,,
60 ,,	53 ,,	55 ,,	95 ,,	71 ,,	75 ,,
65 ,,	60 ,,	61 ,,	100 ,,	73 ,,	76 ,,
70 ,,	63 ,,	68 ,,	105 ,,	74 ,,	77½ ,,
72 ,,	64 ,,	69 ,,	110 ,,	75 ,,	78½ ,,
75 ,,	65 ,,	70 ,,	115 ,,	76½ ,,	80 ,,
80 ,,	67 ,,	73 ,,	120 ,,	77½ ,,	81 ,,

> "The relative maximum temperatures of the wet bulb thermometer must never be exceeded within the factory or shop except when the humidity in the fresh open air surrounding the factory or shop is so excessive that it shows an increase in those relative temperatures. On such occasions the wet bulb temperature within the factory may be increased in the same proportion as that shown by the open air."

This factory regulation was adopted on the recommendation of J. L. Bruce and followed on his observations that a dewpoint of 62 deg. F. gave comfortable and desirable conditions. He says :—

> "The results of my observations and of those available to me from the Sydney Observatory, which embraced widely different absolute temperatures, and ranges of temperatures between wet and dry bulbs, together with the personal sensations so induced, seemed to prove that so long as the dew point did not rise much above 62 deg. F. the conditions were not unpleasant, and that even with very high dry bulb temperature bodily vigour was not impaired. In point of fact, the table of permissible dry and wet bulb temperatures, which is embodied in the New South Wales Factories Act of 1909, was calculated by me for a minimum dew point of 57 deg., and a maximum of 67 deg., that of course for dry bulb temperatures above 57 deg. and 67 deg. respectively."†

In our view the more general adoption of the practice of stating dew point, or, better still, the grains of moisture per cubic foot, would give a clearer appreciation of moisture in the atmosphere, which is the chief cause of unpleasant weather conditions in Sydney.

The use by Bruce of the absolute humidity as a means of determining comfort has in part been followed by us, but with the important addition that we have applied the more recent ideas dealing with the value of air movement in correcting the conditions of discomfort caused by increased humidities.

We would add that in our opinion Bruce's idea of the value of the dew point, *i.e.*, the absolute humidity, is sound, and that no better single figure exists as an index of comfort.

After the gazettal of the New South Wales Regulations, no attempt was made to enforce a definite amount of humidity in factories, attention being directed only to those factories which work with a high wet bulb. At temperatures below 85 degrees dry bulb, 73·5 degrees wet bulb, this regulation gave sufficient humidity (50 per cent.) for most worsted textile processes. We would go farther than Bruce and while admitting the value of the dew point or absolute humidity, we would allow a greater humidity at the higher temperatures, and introduce air movement to compensate for a higher absolute humidity (*i.e.*, a higher dew point) in approved mills.

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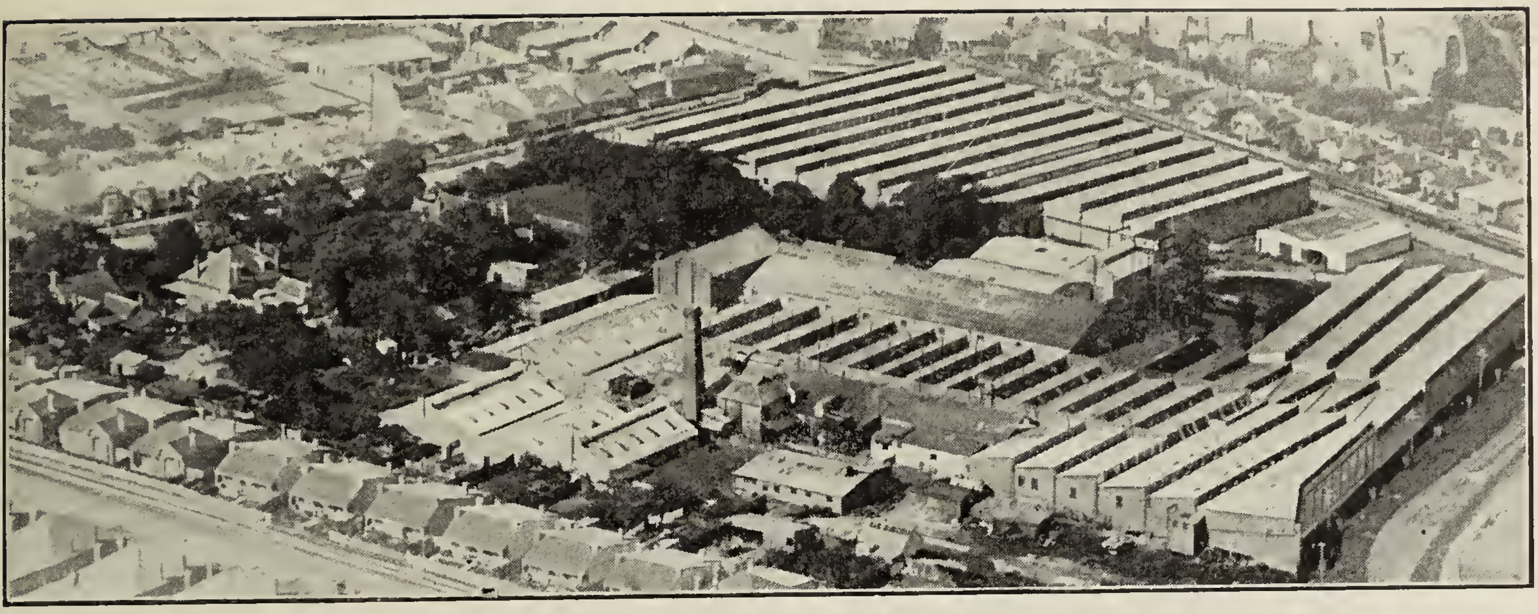
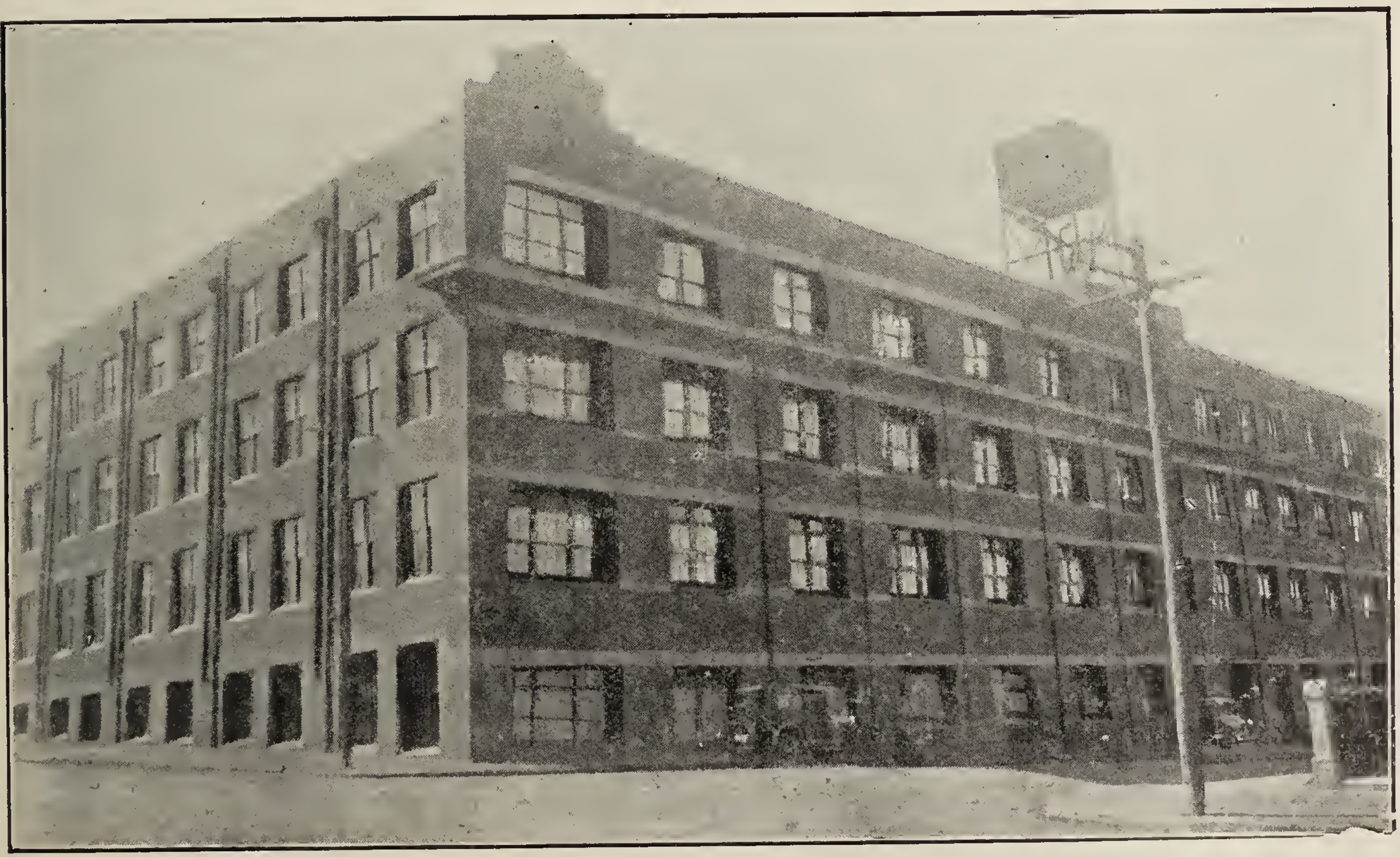
* Report of the Departmental Committee on Artificial Humidity in Cotton Cloth Factories. London. H.M. State Office, 1928.

† Bruce, J. L. "Moisture and Temperature in Air in Relation to Comfort and Health," Technical Gazette of N.S.W. Vol. VI, 1917, Part I.



An aerial view of Vicars' Worsted and Woollen Mills, Sydney. Frame spinning section at far corner of photograph. An example of a single-storey mill, the type most common in Australia.



Globe Worsted Mill, Sydney. An example of a multi-storey mill. Note the window ventilation.

The consideration of this question of humidity in textile mills has arisen partly from our work in 1924,* following which one of us advocated the adoption of a standard of air movement, and partly from the desire of certain mills to use more humid conditions than are allowed by Bruce's scale.

With the great increase of textile manufacture in Australia, more humid conditions are desired by various mills engaged in several processes, as, dry combing, worsted mule spinning, cap-and-ring spinning, and cotton weaving and spinning, and it seemed better to us to review the whole problem rather than to deal with the processes piecemeal.

Section II.—Conclusions and Recommendations.

We think it is necessary to recast the regulations governing the use of artificial humidity in factories in New South Wales and to provide for an air movement as determined by us which increases *pari passu* as the humidity and temperature of the atmosphere.

We advise that regulations be drafted for various processes according to their particular technical needs. At the present time the textile processes requiring the use of artificial humidity may be placed in two classes.

Class I includes those processes requiring humidity not greater than 55 per cent. at 75 degrees F. dry bulb.

Class II includes those processes requiring humidity above 55 per cent. at 75 degrees F. dry bulb.

In Class I will be placed the frame spinning of worsted and nearly all worsted processes.

In Class II will be placed worsted mule spinning and dry combing.

The air movements which we require in processes coming under Class I, closely approximate those asked for by one of us in a previous investigation in 1924.*

The greater part of frame spinning is at present done without any artificial humidity and with natural ventilation. Certain mills, however, operate with humidity ranging up to 60 per cent. secured by plenum system or atomisers and with or without natural ventilation.

Good examples of these mills would be :—

Yarra Falls—Atomisers.
Natural ventilation.
Valley—Plenum ventilation with chamber humidification.
Alexandria —Atomisers.
" Crevice " and accidental ventilation.

It is our opinion that in New South Wales, frame spinning with the use of artificial humidity up to 55 per cent. R.H. could be satisfactorily carried on with conditions of comfort to the personnel with natural ventilation and the use of an adequate number of atomisers, the air movement to be aided by the provision of fans.

We recognise that an adequate plenum system, properly maintained would give more even results, but from experience we appreciate the more varied conditions of air movements which natural ventilation provides.

Our summer climate lends itself to what we call " open air spinning." Our frame spinning rooms lose their relative humidity on account of their increase in temperature. In view of the horse power employed this appears unavoidable, but this increase in temperature should not exceed 10 degrees F. when the outside shade temperature is 80 degrees F., and with cooler roofs could be reduced to 7 degrees F. Windows sufficient to allow a big air change are necessary to keep down the temperature of a frame spinning room.

To encourage the practice of what we have styled open air conditions of spinning, we would agree to a plan of combating the dry, chiefly westerly weather, which we from time to time experience, by permitting the mill to be closely sealed (as is the practice in our own homes) and not requiring the air movements which we have laid down. We rely on the lowered dry bulb temperature which this procedure would bring about, partly to compensate for the decrease in air movement. The atomising of water in these dry conditions results in a marked diminution of the dry bulb temperature.

In the mule spinning of worsteds owing to the high humidity required and the fact that the optimum dry bulb temperature for the process is 80 degrees F., care should be taken in the construction of mill buildings so that there will be little increase in temperature when the outside temperature exceeds 80 degrees F., certainly not more than 5 degrees F.

In some cases in textile mills, the increase in temperature is largely due to unsatisfactory roofs, and we are of the opinion that all roofs should be double with an insulating air space.

Narrow and multi-storey mills are found to give better atmospheric conditions than old type extended and single-storey structures.

We would follow the English Committee of 1928 and urge that the local authority vested with power to approve of the plans of any new building should be required to submit such plans for approval to the Chief Inspector of Factories.

We recommend regulations governing the use of artificial humidity in textile mills be drafted along the following lines :—

Class I—To apply to those processes not requiring more than 55 per cent. relative humidity at 75 degrees F. dry bulb.

At temperatures at or above 75 degrees F. dry bulb the relative humidity is not to exceed 55 per cent. when artificial humidity is used.

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* Badham, C.—" Investigation into the Health and Factory Conditions of Certain Textile Workers." Annual Report, Director-General of Public Health. N.S.W. 1923.

When artificial humidity is used the temperature in a frame spinning section is not to exceed the outside shade temperature by more than 10 degrees F. when the outside shade temperature is 80 degrees F. or over, provided that the outside shade temperature has not decreased by more than 2 degrees F. during the hour prior to the test.

Ventilation.—Permanent ventilation of 24 square inches per person employed as required by the Act, and windows or wall louvres or an efficient plenum system.

Humidity.—To be supplied by cold water atomisers, plenum system or other approved method. The humidity is not to exceed the following scale.

Dry Bulb, degrees F.	Wet Bulb, degrees F.	Relative Humidity, per cent.	Air Movement, Feet per minute.
80	68	55	20
85	72·5	55	50
90	77	55	90
95	81	55	180
100	85	54	420

The air movement required (to be averaged along the diagonals of the mill) is shown in the above table.

Special Provision for Dry Days.—When the outside humidity is below 40 per cent. and the mill depends wholly on natural ventilation for its air movement, and windows or louvres, &c., are kept closed to preserve humidity, then the air movement standards shall not be required.

Buildings.—Roof to be double. Walls to be brick or approved material.

Class II.—To apply to those processes requiring relative humidity above 55 per cent.

Temperature.—Not to exceed 5 degrees F. over the outside shade temperature when the latter is over 80 degrees F.

Ventilation.—By plenum and/or exhaust or natural means. If 30 cubic feet per person per minute is not supplied by plenum at all temperatures then permanent ventilation of 24 square inches per person is required.

Humidity.—By plenum or cold water atomisers or other approved means. The humidity is not to exceed the following scale :—

Dry Bulb, degrees F.	Wet Bulb, degrees F.	Relative Humidity, per cent.	Air Movement, Feet per minute.
80	72	70	45
90	82	70	220
95	85	66	420
100	85	54	420

Air Movement.—The air movement required is shown in the above table.

Buildings.—As in Class I.

Personnel.—No person male or female under the age of 16 to be employed in processes which are placed in Class II.

SECTION III.—DETAILS OF MILL CONDITIONS.

(a) *Character of Buildings.*

Our work in the textile mills in Sydney has been principally concerned with the atmospheric conditions in the sections of frame spinning and French mule spinning.

In Alexandria Worsted Spinning Mills the French system of drawing and mule spinning are separated from other operations; these processes demand a high temperature and relative humidity.

The buildings are of two main classes, viz., single storey and multi-storey.

The single storied buildings are usually built with brick walls and the roof is of a saw-tooth construction. The skylights do not always face south. The height of the roofs is between 15 and 20 feet. The material of the roof is in some cases galvanised iron, but may be fibro-asbestos cement. Only one factory has a double roof and this not by design. Since the double roof was constructed the use of the plenum system (which was installed with a single roof) is not required and is now not used.

The multi-storey buildings are the most modern buildings and are built of reinforced concrete and brick, with a height between floor and ceiling of 15 feet and depend principally on natural ventilation.

(b) *Methods of Humidification Employed and their Efficiency.*

The efficiency of a humidifying system may be measured by comparing the outside and inside temperatures when the humidifying plant is operating and is not operating, other conditions as to work, ventilation, &c., being the same.

The cooling which is due to humidification is brought about by the heat which is absorbed by the vaporisation of water. Ventilation cools when heated air is removed and cooler air takes its place. The cooling power of these methods depends, not only on the amount of ventilation or humidification, but to a large extent on prevailing weather conditions. The cooling power of humidification depends principally on the outside wet bulb, as air cannot be cooled by humidification below the outside wet bulb temperature.

On a dry day when the relative humidity is low the air can be cooled more than on a sultry day when the relative humidity is high, for it is possible to evaporate more water.

Humidification may be produced by humidifiers or atomisers throughout the mill or by humidifiers in conjunction with a plenum plant. In a plenum plant the air is pumped through a chamber and more or less water vapour taken up before it is distributed in the mill.

The difference in the efficiency of these methods is small. If local humidifiers are used with sufficient atomising capacity and the windows or other means for natural ventilation used so as to effect the required amount of air change, high humidities can be maintained despite the loss of water vapour which results. Mills can be operated in this manner at temperatures very close to those mills which have a plenum plant and chamber humidifier, and at a much less capital and operating cost.

Some mills rely on local humidification, combined with chamber humidification, but in each case the plant is of insufficient capacity, and the natural ventilation is not used to the best advantage in conjunction with the other plants.

The measure of the efficiency of a humidifier can be obtained by comparing the dry bulb temperature after humidification with the wet bulb temperature of the air before humidification. With 100 per cent. efficiency these values would be the same, and the absolute humidity after humidification should equal the absolute humidity when the air is saturated at the wet bulb temperature of the air before humidification.

Allowance must be made, however, for the initial relative humidity of the air, for when the air has an initial low relative humidity it can more readily absorb moisture.

The lack of efficiency of plants tested is due to poor design; in one the water is not broken up sufficiently to allow evaporation readily, whilst others lack proper supervision and care in operation.

(c) *Mill Atmospheric Conditions Experienced.*

An inspection of seven Sydney textile mills indicated that the departments in which the working conditions required regulating and improving were the French mule spinning and frame spinning. The weaving sections when isolated from the spinning sections were satisfactory, and the carding process imposes certain practical difficulties (it requires to be carried out in as little air movement as possible) which makes it almost imperative that it should be separated from the spinning sections, in which the present air movements will require improvement. For the above reasons observations of the mill conditions were practically confined to the spinning sections, readings being taken in the other sections chiefly as controls.

The investigation covered the months of January, February and March, the period when outside temperature and humidities make the mill conditions most trying for the personnel. For each mill we recorded the wet and dry bulb temperatures, relative and absolute humidities, the wet (using silk lace finger stall) and dry kata cooling powers from which air movements were computed. Our personal sensations with regard to the atmospheric conditions were taken as an index of comfort. With each set of temperatures, humidities and kata cooling powers, two or three of us wearing similar clothing to the male operatives recorded independent comfort votes, varying degrees of comfort being interpreted by assigning comfort votes according to Vernon's scale.* A vote of three or better recorded satisfactory working conditions. Votes lower than three showed unsatisfactory working conditions. Votes were never recorded until we became acclimatised to altered conditions, especially after changing from a position where the air movement was poor to one where it was more marked, as it was frequently found that the cooling effect of an air movement was most marked when we had been sweating, but its value depreciated as the skin became dry. Sweating, moist skin or dry skin was noted.

When possible the air movements were calculated from the monograms constructed and described by Leonard Hill in the Report of the Departmental Committee on Artificial Humidity in Cotton Cloth Factories.† These monograms are reproduced in Appendix I. They can only be used when the air movement is above 60 feet per minute. Air movements lower than this have been calculated from dry kata cooling powers using Vernon's calibration.‡ Outside dry and wet bulb temperatures, humidities and weather conditions were observed, in order to study the effect of these varying factors on the mill conditions, and the rate at which the different mills responded to these factors.

Apart from our own observations we installed recording thermometers in one mill over a period of two months and had an opportunity of studying the daily records of two other mills. We were also able to obtain from two Victorian mills some very valuable daily records taken in the frame spinning and mule spinning sections. Experiments were carried out in certain of the Sydney mills to determine the air movement required to produce comfort.

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* "Methods of Investigating Ventilation and its Effects." By H. M. Vernon and others. Medical Research Council. 1926. Special Report Series, No. 100, p. 35.

Sensations of air movement experienced :—

Very stagnant	0
Very stagnant to stagnant	1
Stagnant	2
Stagnant to medium	3
Medium	4
Medium to fresh	5
Fresh	6
Fresh to very fresh	7
Very fresh	8

† Report of the Departmental Committee on Artificial Humidity in Cotton Cloth Factories. London: H.M. Stat. Office. 1928.

‡ Medical Research Council, Special Report Series 100: Methods of Investigating Ventilation and its Effects. By H. M. Vernon and others. London. 1926.

On account of the relatively small horse-power employed which limits the rise in temperature, and the higher humidities required for worsted mule spinning, regulations governing this class of spinning must, of necessity, be framed on different lines to regulations to control atmospheric conditions in frame spinning sections. The data collected has been analysed under two headings: (*a*) Worsted mule spinning; (*b*) Frame spinning.

(a) *Mule Spinning.*—This method of spinning is practised in Alexandria Spinning Mill (Sydney) and Yarra Falls Mill (Melbourne), and both mills rely upon atomisers for humidification and lack of ventilation to retain the high humidities required for the process. Any ventilators fitted are capable of being closed and no provision has been made for permanent ventilation. The absence of all but crevice ventilation is reflected in the kata cooling powers and air movements observed in Alexandria Mills. The wet kata cooling power under normal conditions rarely reached 8 and was at times as low as 6, and due to the lack of air movement the working conditions have occasionally been intolerable. Only on one day during our investigation did we consider that the conditions were comfortable for working, and on this day spinning of most counts ceased owing to the low relative humidity. The relatively low horse-power required for the mules and the cooling effected by the evaporation of the atomised water combine to keep the mill temperature within 6 deg. of the outside temperature when the outside temperature exceeds 80 deg. F. and the relative humidity is about 60 per cent. When we have abnormally high temperatures outside the relative humidity is low, and the efficiency of the cooling effect of the evaporation of atomised water keeps the temperature in the worsted mule spinning sections lower than outside.

The average increase in temperature over the outside under equal outside conditions is 3 deg. greater for Alexander Mill than for Yarra Falls. This difference is probably due to (1) the more efficient roof at Yarra Falls; (2) the aspect of the buildings, Yarra Falls lights facing south, and Alexandria south-west.

Table I is a summary of the average rise in temperature at 3 p.m. in the mule spinning rooms of Alexandria and Yarra Falls Mills, negative values indicating that the mill temperature is lower than the outside temperature. When the humidity is high a rise in temperature greater than the average may be expected, and a smaller rise on days of low humidity. The temperature rise will to a certain extent be governed by the weather, *e.g.*, sunshine, cloud or rain.

TABLE I.—Showing the average rise in temperature above the outside temperature in the mule spinning rooms at Alexandria and Yarra Falls Spinning Mills at 3 p.m. A negative value indicates that the mill temperature is lower than the outside temperature.

Outside Dry Bulb Temperature at 3 p.m.	Average Rise in Temperature at 3 p.m.	
	Alexandria Worsted Mule Spinning Rooms.	Yarra Falls Worsted Mule Spinning Rooms.
deg. F.	deg. F.	deg. F.
70 – 75	12·5	10
75 – 80	6	8
80 – 85	6	3
85 – 90	5	1
90 – 100	– 6	– 8
Over 100	–12·5	...

In compiling the above table days on which rapidly changing outside conditions have been encountered were deleted, and it appears that there should be little difficulty in keeping the mill temperatures within 5 deg. of the outside when it is considered that both mills discussed require a small air change. That the air change in Alexandria mill is extremely small is shown by a carbon dioxide determination of 8·2 parts per 10,000, a comparatively high reading for a room in which there is 7,300 cubic feet per person employed.

Limited natural ventilation and the use of additional atomisers to preserve the relative humidity or a plenum plant with humidification plus atomisers would improve the working conditions for the personnel by reducing the temperature and increasing the air movement, without decreasing the relative humidity required for the technical process. But natural ventilation, with the exception of the amount of permanent ventilation required by the Act, *i.e.*, 24 square inches per person, should be adjustable to allow the mill to be closed on days of low humidity. With their present installation of atomisers both mills have difficulty in maintaining a relative humidity of 70 per cent., the amount asked for by Alexandria Mill and regarded by various authorities as the optimum humidity for the process. Even with slightly lower humidities the working conditions are in the summer months always oppressive, and at times intolerable, but could be made comfortable for the operatives by increased air movements. At present this rarely exceeds 10 feet per minute. In order to determine the amount of air movement necessary to produce comfortable conditions we experimented with fans, measuring the air movement necessary at varying combinations of wet and dry bulb temperatures. We found that increased air movement in all cases relieved the oppressive conditions, and unless the dry bulb was over 90 deg. F. comfortable conditions could be obtained with air movements up to 200 feet per minute. From the fan experiments we have determined the air movements necessary for comfort at optimum mule spinning conditions as follows:—

Dry Bulb.	Relative Humidity.	Air Movement.
80	70	45
85	70	90
90	70	220

(b) *Frame Spinning.*—The problem in the frame spinning sections is quite unlike that in the mule spinning. The machinery employed in frame spinning requires a relatively high horse-power which results in a marked rise in the mill temperature over the outside temperature. However, to compensate for the higher temperature a lower humidity is required, and with the high natural humidities experienced in Sydney satisfactory temperatures and humidities can on normal days be obtained in the hottest months with good natural ventilation and no artificial humidification. Provision would have to be made for closing the mill on the occasion of dry westerly winds. On these days if the spinning is to be done under the best condition of humidity, humidification is essential, and either humidification by atomisers, as at Alexandria, or by a plenum system, with recirculation, as at the Valley Mill (Geelong) has proved satisfactory. In other mills the present systems of humidification have proved inadequate to cope with the abnormal conditions met with.

The humidities required and in use in the frame spinning sections of the mills are reasonable, but due to the nature of the building, the high horse-power per square foot of floor area, and in some cases the poor ventilation, the temperatures of these sections often make the working conditions intolerable. If the mill temperature does not exceed 90 deg. the working conditions may be made comfortable by increasing the air movement, but above this temperature the value of air movement less than 100 feet per minute is not marked.

Table II summarises the conditions experienced in the frame spinning departments of Sydney and Victorian mills. In Vicars' Mill readings are shown (1) when the ventilaing plant is working, and (2) when natural ventilation alone is used. At the high temperatures the Valley Mill (Geelong) re-circulates the mill air.

Table II.—Showing for Sydney and Victorian mills a summary of the working conditions experienced at 3 p.m. in the frame spinning departments during the months of January to April, 1929. The table shows the methods of ventilation and humidification, the average wet kata cooling power, the average air movement, the rise in temperature above the outside temperature :—

Mill.	Ventilation.	Humidification.	Average wet kata cooling power.	Average air movement.	Rise in temperature when the outside is—				
					75–80 ° F.	80–85 ° F.	95–90 ° F.	90–95 ° F.	Above 95 ° F.
				ft. min.					
Alexandria	Crevice and accidental.	Atomisers	10·6	25	+12	...	+ 9	+ 2	— 4
Vicars	Plenum system and natural.	Chamber method...	15·2	80	+ 8	...	+ 5	...	0
,, ...	Natural only	Nil	12·5	40	+ 9	+ 9	...	...	...
Globe	Plenum	Chamber method...	12·3	50	+ 9	+ 5	+ 4	+ 1	— 2
Colonial	Exhaust	Air drawn through wetted hessian.	12·2	35	...	...	...	...	...
Australian Woollen—									
No. 1 Mill............	Plenum	Chamber	...	...	...	+12	...	...	+ 2
No. 2 ,, ...	Natural	Nil	...	...	...	+11	...	...	+ 5
No. 3 ,, ...	,, ...	,, ...	14·5	60	...	+ 4	...	...	+ 2
Yarra Falls	,, ...	Atomisers	...	...	...	+ 9	+ 6	+ 6	— 1
Valley	Plenum	Chamber	...	...	+ 8	+ 6	+ 3	0	— 3

On average days each of the mills is able to maintain a relative humidity of about 50 per cent., but on days when the outside relative humidity is low, only Alexandria, with atomisers and negligible ventilation, and Valley, using a plenum system and recirculation of the mill atmosphere, are able to retain satisfactory humidities.

Table III shows the conditions found in six Sydney mills on a dry day when the outside conditions at 3 p.m. were, Dry Bulb 98 deg. F., Wet Bulb 65 deg. F., Relative Humidity, 14 per cent :—

Mill.	Section of Mill.	Ventilation.	Humidification.	Dry Bulb.	Wet Bulb.	Relative Humidity.
Globe	Frame spinning	Plenum and natural ...	Chamber	92	66	13
Australian Woollen Mills—						
No. 1 Mill	,, ,, ...	Plenum and natural ...	,,	100	66	13
,, 2 ,, ...	,, ,, ...	Natural	nil	103	66	10·5
,, 3 ,, ...	,, ,, ...	Natural	nil	100	63	8
Vicars	,, ,, ...	Natural and plenum ...	Chamber	96	68	22
Alexandria	,, ,, ...	Crevice	Atomisers ...	95	79	49·5

Table III, showing typical conditions in the frame spinning sections of six Sydney mills on a day when the outside dry bulb was 98 deg. F. and the relative humidity 14 per cent.

During January and February, 1929, the lowest humidity in the frame spinning section of the Valley Mill was 41 per cent., and averaged 58 per cent. in January and 64 per cent. in February. This mill is worthy of special notice, being the only mill capable of coping with the Australian summer climate, and able to produce conditions satisfactory for frame spinning and comfort for the operatives. The type of humidifier is similar to that in use at Vicars' Mill, but is designed so that the air may be drawn from outside the mill or the mill atmosphere may be recirculated. Recirculation is chiefly used when the outside relative humidity is low. Katathermometer readings could not be obtained, but the design and layout of the duct system makes it appear that the air movements would be of the same order as those recorded at Vicars. Of the others, Alexandria can, on practically all occasions, retain the humidity required, but the rise in temperature, added to the lack of air movement, makes it oppressive for the operatives.

The rise in temperature in Mills No. 1 and 2 of the Australian Woollen Mills is in part due to the fact that the No. 3 mill blocks the natural ventilation. Without an efficient ventilating and humidifying plant the rise in temperature in these two mills cannot be obviated. No. 1 mill has a plant installed, but it appears to be inefficient and is only used intermittently.

The other mills, relying on natural and/or plenum ventilation, are on average summer days satisfactory for spinning and comfort.

From our own observations and from a study of the records of the various mills, good window ventilation gives satisfactory conditions in the frame spinning sections for the process and the operatives on 90 per cent. of the summer days, but provision must be made for the other days. Without some form of humidification the best spinning conditions cannot be maintained on the occasional dry days, but by shutting up the mill, the temperature may be kept below or close to outside temperature on these days. Atomisers plus marked natural ventilation will not keep the relative humidity at the point required for spinning, but atomisers plus very limited ventilation will maintain the humidity and keep the temperature of the mill below that of the outside and the use of fans will make the working conditions satisfactory.

An efficient plenum plant as installed at the Valley Mill has advantages over other methods of controlling the temperature and humidity—

(1) It can give satisfactory humidities under all conditions.

(2) Good air movement is provided.

(3) There is a ready response to changing outside conditions.

SECTION IV.—SYDNEY CLIMATIC CONDITIONS AS RELATED TO THE TEXTILE INDUSTRY.

Sydney, by virtue of its coastal position, has an equable climate without extremes of temperature, and the average monthly humidities vary between 60 and 80 per cent. throughout the year.

Mares* has stated: "The normal and diurnal average of temperature at Sydney, however, is less than at any other Australian capital, the mean seasonal amounts being—spring, 15·0 degrees; summer, 13·4 degrees; autumn, 12·7 degrees; and winter, 13·4 degrees."

The prevailing wind from October to April inclusive is north-east, an ocean breeze which causes a high absolute humidity. In the other months the prevailing wind is a westerly, and although the relative humidity is high, the absolute humidity is low, for this is in winter a cold land wind.

For an average summer day the temperature, absolute humidity and relative humidity do not vary to any great extent between the hours of 9 a.m. and 3 p.m. Between these hours the temperature variation is generally less than 5 deg. F, and the variation in relative humidity is seldom more than 10 per cent.

These average days cover at least 90 per cent. of the summer period, but occasional dry westerly winds are experienced, and then the temperature reaches to 100 deg. F. and the relative humidity drops below 30 per cent. The following examples show typical variations in temperature and humidity on (1) an average summer day, and (2) an extreme summer day, during the summer of 1929:—

	Wind.	Date.	9 a.m.			Noon.			3 p.m.			Max. Dry. Bulb: Bulb ° F.
			Dry Bulb.	Wet Bulb.	Rel. Hum.	Dry Bulb.	Wet Buil.	Rel. Hum.	Dry Bulb.	Wet Bulb.	Rel. Hum.	
			° F.	° F.	%	° F.	° F.	%	° F	° F.	%	
1. Normal day ...	N.E.	1st Jan., 1929	78·0	69·1	61	79	70·5	66	76·9	69·5	67	79·5
2. Extreme day...	W.	9th Jan., 1929	86·7	74·2	54	104	71	18	104·5	71·0	14	106·2

Table IV showing for Sydney typical variations in humidity and temperature between 9 a.m. and 3 p.m. on (1) a normal summer day, and (2) an extreme summer day. At least 90 per cent. of the summer period is of these normal days.

During the coldest months of the year when the prevailing wind is a westerly, the average monthly temperatures vary from 53 deg. to 59 deg., and the mean 9 a.m. relative humidity (this may be taken as the approximate humidity during the hours 9 a.m. to 3 p.m.), from 60 per cent. to 78 per cent.

Table V shows for Sydney the following monthly data averaged over a period of sixty-eight years. The mean maximum temperature, the mean minimum temperature, the mean temperature, extremes of temperature, mean relative humidity and highest and lowest mean relative humidity, and the prevailing wind.

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* Mares, D. J., "The Temperature and Humidity of the Various Winds in Sydney." Australian Monthly Weather Report. Vol. 3, No. 4, 1912, pp. 161.

Table V, showing for Sydney the following monthly data averaged over a period of sixty-eight years. The mean maximum temperature, the mean minimum temperature, the mean temperature, extremes of temperature, mean relative humidity, and highest and lowest mean relative humidity, and the prevailing wind.

Month.	Temperature. Mean Temperature. ° F.			Extreme shade Temperature. ° F.		Relative Humidity. Percentage.			Prevailing wind.
	Mean. Max.	Mean. Min.	Mean.	Highest.	Lowest.	Mean. 9 a.m.	Highest Mean.	Lowest Mean.	
January	78·4	64·8	71·6	108·5	51·2	67	78	58	N.E.
February	77·7	65·0	71·3	107·8	49·3	71	81	59	N.E.
March	75·7	62·9	69·3	102·6	48·8	73	85	62	N.E.
April	71·3	58·1	64·7	91·0	44·6	76	87	63	N.E.
May	65·4	52·2	58·8	86·0	40·2	78	90	63	W.
June	61·0	48·3	54·7	79·8	38·0	77	89	68	W.
July	59·5	45·9	52·7	78·3	35·9	76	88	65	W.
August	62·6	47·5	55·0	82·0	36·8	72	84	56	W.
September	67·0	51·4	59·2	92·3	40·8	66	79	49	W.
October	71·3	55·8	63·6	99·7	42·3	63	77	46	N.E.
November	74·5	59·6	67·1	102·7	45·8	63	79	42	N.E.
December	77·2	62 9	70·1	107·5	48·4	64	77	52	N.E.
Extremes	......	......	......	108·5	35·9	...	90	42	......
Averages	70·1	56·2	63·2	......	......	69	...	...	......

Results of observations over past 68 years. (From Official Year Book for Commonwealth of Australia, 1927).

Season.	Direction of Wind.	Mean readings 9 a.m.			Mean readings 3 p.m.		
		Dry Bulb, Degrees F.	Relative Humidity, per cent.	Absolute Humidity, Gr. c. ft.	Dry Bulb, degrees F.	Relative Humidity, per cent.	Absolute Humidity, Gr. c. ft.
Summer	North-east	75	64	6·0	77	64	6·3
Winter	West	50	76	3·1	59	56	3·2

Table VI extracted from a table compiled by Mares to indicate the seasonal temperature, Relative humidity and absolute humidity, and the various winds at Sydney, shows the mean 9 a.m. and 3 p.m. temperatures, relative humidities and absolute humidities associated with the north-east wind in summer, and the westerly wind in winter. These are our periods of greatest and least absolute humidity.

Is this climate suitable for the technical processes of the textile trade ? This question can be a answered in the affirmative if the optimum conditions for spinning—chiefly the humidity—can easily be obtained either with or without artificial humidification. We are mainly concerned with spinning and allied processes, which may be separated into—

(1) those processes requiring relative humidities of about 70 per cent.

(2) those processes requiring relative humidities of about 50 per cent.

(1) Our climate makes it imperative to use artificial humidification for processes requiring the higher humidities, such as in worsted mule spinning. On some days such as we experience in February, this type of spinning could be carried out under optimum conditions with good natural ventilation and no humidification, but on most days humidification is required. During the summer period the rise in temperature in a mule spinning section with small ventilation is about 5 degrees F., and this rise in temperature is sufficient to reduce the relative humidity below the desired limit. Neglecting the days when the outside relative humidity is low, humidification either by atomisers or an efficient plenum plant gives satisfactory conditions. In the colder months, artificial heating is required to obtain optimum temperature conditions, and humidification is necessary. During this period of the year the absolute humidity is low and after heating the mill the relative humidity without artificial humidification is below the desired limit.

(2) In frame spinning or allied processes where the humidity required is about 50 per cent., mills designed for natural window ventilation can on at least 90 per cent. of the summer days obtain good spinning conditions without humidification. We find that the mill temperature is kept within 10 degrees of the outside, making the average mill temperature about 85 degrees F. to 90 degrees F. At 90 degrees F. 50 percent relative humidity corresponds to an absolute humidity of 7·3 grains per cubic foot, and at 85 degrees to 6·3 grains per cubic foot, approximately the absolute humidities experienced on most days during our hottest months. Some of the mills on these days lose their relative humidity on account of small air change and the consequent increase in temperature.

In the colder months, heating is required to produce optimum temperatures ; if the mill were kept at or near 75 degrees F., dry bulb, the absolute humidity would be too low to give optimum relative humidity, but the deficit could easily be made up by the use of artificial humidification by atomisers or plenum plant.

SECTION V.—INDEX OF COMFORT IN TEXTILE MILLS.

The heat of the human body has to be kept within quite a small variation to maintain health. The heat which is generated depends on the metabolism of the tissue cells or the activity of the musculature. The greater or less the metabolism or physical exertion the greater or less the heat production.

Under salubrious conditions the heat production is delicately balanced by the heat loss. Only the physical means of radiation, convection and evaporation are available to make a heat loss to keep the body temperature within a compass of few degrees wherein lies comfort, efficiency and even life.

The rate of heat loss by radiation is proportioned to the difference between temperature of the body and that of the air. Convection removes the heat from near the body by the air currents produced when the air adjacent to the body becomes heated. The rate of heat loss by evaporation is governed by the absolute humidity of the atmosphere, and the heat loss by both convection and evaporation is accelerated by the removal of the hot and moist air surrounding the human body. Thus the rate of heat loss, the factor on which the comfort of the individual depends, is governed by the temperature, humidity, and air-movement, and the efficiency of air-movement is dependent on the clothing worn. In estimating the index of comfort we must consider one other factor, that of acclimatisation, and although the effects of all five factors are combined, they may be considered separately :—

(1) Clothing;
(2) Air-movement;
(3) Temperature and humidity;
(4) Acclimatisation.

(1) *Clothing.*

The value of wearing suitable clothing in hot or humid atmospheres has long been recognised. Opinions in regard to this subject are summed up by Dr. Vernon's statement in giving evidence before the Departmental Committee on Artificial Humidity in Cotton Cloth Factories.* He said, "I think that the clothing can really produce greater effect for good or evil than any degree of ventilation can. There is a good deal you can do in the way of ventilation, but the utmost you can do is not so effective as the wearing of really suitable clothing."

The recent work of Leonard Hill,† Vernon,‡ and Yaglou§ has shown that the factor of suitable clothing should not be under-estimated.

In a previous investigation|| we determined the kata cooling powers and air-movements necessary for comfort when wearing clothing usually worn in our summer and winter seasons. The air-movement necessary for comfort at known temperatures and humidities under these conditions was approximately twice that required for comfort when wearing clothing (trousers and cotton singlet) suitable for male operatives in spinning mills. The present costume of girls and women, cotton chemise, silk bloomers and short slip and no stockings, is suited for these mills.

Although it is impossible to regulate the clothing worn by operatives, attention should be drawn to the value of this factor, and much good may be done by encouraging the wearing of rational clothing. This is more commonly done by native-born Australians than by immigrants, and follows on from the surf bathing and sun baking habits of our community.

(2) *Air-Movement.*

With the humidities and temperatures required for optimum spinning conditions, clothing alone is not sufficient to produce comfortable conditions for the personnel, but suitable clothing assisted by air-movement can, in most cases, bring this about, and any regulations for the control of working conditions in textile mills must embody a standard of air-movement depending on the temperature and humidity.

From observations made in the textile mills during the summer weather, in which the mill temperatures were seldom below 85 deg. F., we have determined the air-movement required for comfort at different combinations of temperature and humidity.

We recorded under working conditions the dry and wet bulb temperatures, the dry and wet kata cooling powers from which the air-movements were computed and noted our sensations of comfort, together with remarks as to the appearances of the skin, such as visible sweat, dry skin. When the working conditions were considered unsatisfactory we created an air-movement with a fan, varying the air-movement until the conditions were considered comfortable. Unless the dry bulb temperatures exceeded 90 deg. F., the oppressiveness of high temperatures and humidities could be relieved by air-movement. When the temperatures exceeded 95 deg. we found that air-movement improved the working conditions, but comfort could not be obtained by us unless very high air-movements were used.

Leonard Hill and Vernon* have recently stated that they are against the fixing of a cooling power standard for English mills by the kata thermometer, but we consider that such a standard could be applied to meet our conditions. Investigators in England, India, and South Africa are of a similar opinion.

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* Report of the Departmental Committee on Artificial Humidity in Cotton Cloth Factories, London. H.M. Stat. Office, 1928.

† Hill, L.—"The Science of Ventilation and Open Air Treatment," Part II, Med. Res. Council, Special Rept., Series No. 52, p. 226. London, H.M. Stat. Office, 1920.

‡ Medical Research Council, Special Report Series, No. 100.—"Methods of Investigating Ventilation and its Effects," by H. M. Vernon and others. London, 1926, p. 71.

§ Yaglou, C. P.—"The Comfort Zone for Men at Rest and Stripped to the Waist." J.I.H., 1927, p. 263.

|| Badham, C., Assheton, C. F., and Rayner, H. E., on the "Index of Comfort in the Ventilation of Theatres in Sydney, N.S.W." Report of the Director-General of Public Health, N.S.W., 1926.

Dearden* says, in advocating means for securing better air-movement in English cotton mills, "In my opinion much could be done in this direction by fixing separate kata cooling standards for wet weaving sheds, though I am not prepared to say that Hill's standard for sedentary workers would quite meet the case; I believe rather that the figures should be varied according to temperature. Something in the nature of 6 dry kata and 16 wet for temperatures below 70 deg. and 5 dry and 14 wet for temperatures about 70 deg. might prove reasonable."

Maloney, after an intensive study of the conditions in Indian cotton mills, concluded†, "In tropical climates, the cooling power by dry kata is usually small, and, in some cases, negative, and kata values of the order given are generally impossible, by the ordinary methods of ventilation.

From personal observations taken in Indian mills and workshops a wet kata cooling power of 11 is sufficient to prevent visible perspiration among mill operatives, but higher cooling powers up to 16 are advantageous.

The reasons why a lower wet kata standard would be suitable for Indian mill operatives are influenced by—

(1) The lighter clothing worn;
(2) The greater portion of the body exposed to the cooling influence of air;
(3) The lower basal metabolism of the Indian as compared with the English operative."

For Sydney textile mills we advocate a wet kata cooling power of 14 when the mill temperature is above 80 degrees. This would require the following air-movements in (*a*) mule spinning, (*b*) frame spinning.

TABLE VII showing the air-movement required in mule spinning sections when the wet and dry bulb temperatures are equal to the scale of temperatures requested by the Alexandria spinning mill.

Dry bulb.	Wet bulb.	Relative humidity.	Air-movement required for comfort.
80	74	76	63
85	78	74	120
90	82	71	220
95	85	66	410
100	88	62	916

In frame spinning, where lower humidities are required, the air-movements are lower. The air-movement required in the frame spinning section, adopting a relative humidity of 50 per cent., is shown in table VIII.

TABLE VIII showing the air-movement required to produce comfort in the frame spinning sections where a relative humidity of 50 per cent. is satisfactory for spinning.

Dry bulb.	Wet bulb.	Relative humidity.	Air-movement required for comfort.
80	67	50	Approx. 15
85	71	50	,, 40
90	75	50	70
95	79	50	140
100	84	50	340

When the dry bulb temperature is below 85 degrees the dry kata cooling power could be used as an index of comfort, but the cooling power required would have to vary with the dry bulb temperature and the absolute humidity. As an example, the dry kata required at 85 degrees F. dry bulb, and an absolute humidity of 8 grains, would be 2·85, and at 7 grains, 2·5; if the absolute humidity be kept constant at 8 grains, the dry kata would be 3·7 at 80 degrees F., and 2·85 at 85 degrees F. At temperatures above 90 degrees the dry kata is not satisfactory, and fails to function at 95 degrees F. In a previous monograph we determined the air-movement required, to produce comfort at temperatures between 63 degrees F. and 80 degrees F. and wearing seasonal clothing, and we considered that the dry kata was a better index of comfort than the wet kata. In this investigation the temperatures recorded were all above 80 degrees. Under these conditions the heat loss from the body is assisted by sweating and probably for this reason the wet kata cooling power which takes into account the humidity of the atmosphere is the better index of comfort.

From our observations we found that sweating (visible) was produced when wearing a cotton singlet and trousers and standing when there was minimal air-movement with absolute humidity 9 grains. With similar air-movement and 8 grains the skin was moist. To obtain the greatest benefit from air-movement it should be variable in character such as that caused by an oscillating or rotary fan, a variable air-movement averaging 100 feet per minute being much more effective than a constant air-movement of 100 feet per minute.

(3) *Temperature and Humidity.*

If the temperature and humidity of a mill are kept within certain limits, e.g., at the optimum conditions for spinning, air-movement, aided by suitable clothing, can in practice make the mill conditions comfortable. But the air-movement required to mitigate the effects of very high temperatures and very high humidities is impracticable, and under these conditions the total heat dissipated by radiation, convection, and evaporation is less than the heat generated by the body and adverse physiological reactions take place. If the dry bulb temperature is above that of the body, radiation and convection is arrested (actually the body gains heat from these sources) and the body must lose its heat by the process of evaporation. The rate of heat loss by evaporation depends on the air-movement and the absolute humidity of the surrounding air, and if high humidities are associated with high temperatures the air already heavily charged with moisture is unable to absorb the sweat from the body as quickly as it is produced.

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* Dearden, W. F.—"Health Hazards in the Cotton Industry." J.I.H., 1927, vol. ix, p. 400.

† Maloney, T.—"Humidification in Indian Cotton Mills." Report, 1923, p. 32.

If visible sweating does not occur evaporation is removing the sweat as fast as it is produced. The appearance of visible sweat, however, indicates that the cooling power of the atmosphere is insufficient.

If the air temperature is below but near the body temperature—conditions common in our mills—a small amount of heat is lost by radiation and convection, but evaporation is still the controlling factor, and with high absolute humidities it is difficult to obtain comfortable conditions. Under equal conditions of air-movement, much higher temperatures can be tolerated at low humidities, than at high humidities, but the sensations of comfort or discomfort are difficult to compare.

The endurable limit of the wet bulb is governed by acclimatization, and Australians are able to work at much higher wet bulb temperatures than the average European. The latest regulations for English cotton mills require all work to cease when the wet bulb temperature reaches 80 degrees, but we would allow work to continue with a wet bulb of 85 degrees F.

Adverse reactions which result from exposure to high absolute humidities are: rise in the pulse rate, rise in the body temperature, syncope and convulsive fits. These reactions are grouped together as heat stroke and heat exhaustion and occur when the rate of heat loss is quite inadequate.

Such reactions are not found (in most people) with a wet bulb below 86 degrees F. unless special conditions which prevent heat loss (*e.g.*, overclothing, overcrowding or exercise) occur. Conditions which increase heat loss, as lack of clothing, acclimatization and air-movement, can postpone heat exhaustion.

Wet bulb temperatures over 80 degrees F. should not be tolerated in factories or work places in the absence of a good air-movement.

One of the most interesting accounts in recent years of heat stroke is that of Mavrogordato and Pirow* who dealt with cases occurring in the South African mines. Similar conditions are not unknown in our metalliferous mines. Four cases of sudden death of native boys occurred in the Village Deep mine in September, 1925, and January, 1926. The boys were unacclimatized to the temperatures. Later readings from the places where deaths had occurred showed—

Dry Bulb.	Wet Bulb.	Wet Kata.
Deg. F.	Deg. F.	
90	89·5	5·3
89	86	4·5
88	87·25	6·0
87	86	7·4

The air-movement in none of the places was more than 40 feet per minute.

"The post-mortem appearances were in all cases compatible with death from heat stroke, though, in the absence of the history, Dr. A. I. Girdwood would have been prepared to regard No. 3588 as a case of influenza, the lungs being quite compatible with such a diagnosis.

"There was one case of 'delirium.' 'Fits' and 'delirium' are quite in keeping with heat stroke, and there are numerous references to such seizures in the old literature dealing with the Black Hole at Calcutta and with slave ships. There were many cases of heat stroke in the Mesopotamia campaign during the late war and similar attacks were often noted in connection with them."

These authors discussed these cases under the headings—

1. Critical Level.—Suggesting that while 86 degrees F. wet bulb is the mean critical level for Europeans it might be higher for natives as Maloney suggests for India.
2. Acclimatization.—The boys affected were working their first or second shifts.
3. Age and Physique.—Youth and ill-developed men probably mostly affected.
4. Self-protection.—By adjusting rate of work to conditions.
5. Intercurrent Maladies.—These may be an important factor and determine the onset of heat stroke.
6. Rate of Air-movement.—This influences cooling conditions as much as temperature.

They consider that for the Witwatersrand mines a desirable cooling rate would be a wet kata of 16 while a good enough cooling rate is a wet kata of 12.

They say, "Air moving at 700 feet per minute gives the desirable cooling rate up to a temperature of 81.5 degrees F. wet bulb, and good enough cooling rate up to 85·5 degrees F. wet bulb.

"Air moving at 250 feet per minute gives the desirable cooling rate up to a temperature of 75 degrees F. wet bulb, and good enough cooling rate up to 80 degrees F. wet bulb."

In Sydney humid textile mills we would ask for a wet kata of 14.

The effective temperature for men at rest and stripped to the waist on our requirements of a wet kata of 14 at wet bulb 85° F., dry bulb 95° F. and no air movement is 84. To bring this effective temperature within the zone of comfort for these conditions would require an air movement of 700 feet per minute, according to the requirements of Yaglou and other American authorities.† At lower wet bulb temperatures the air movement required by us would bring the effective temperature within the comfort zone.

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[*] Mavrogordato, A. and Pirow, H. Deep Level Mining and High Temperatures. An Enquiry into Certain Cases of Sudden Death, Presumably due to Heat Stroke, with a report on the Associated Conditions. South African Institute for Medical Research, 1927, Vol. 25.

[†] Yaglou, C. P.—The Comfort Zone for Men at Rest and Stripped to the Waist. Journal Industrial Hygiene, June, 1927.

(4) *Acclimatization.*

It is common knowledge or belief that acclimatization plays a large part in adjusting a human being to his environment, but the physiological basis for this belief is by no means as firm as our faith. There are, however, certain physiological experiments and determinations which point out a road along which we may advance in considering the subject of acclimatization, but the road is by no means as clearly defined as one would expect.

When we deal with the problem of the index of comfort for any locality and compare the results obtained by workers in different parts of the globe, we should always keep in mind the concept that basal metabolism, the rate of production of bodily heat in the resting state, is at a lower level in individuals in warm or tropical places and at a higher lever in colder parts. This difference in basal metabolism is probably the measure of acclimatization.

What is the basal metabolism of individuals in Sydney?—Corlette* forecasts after considering the heat loss by respiration of a type individual for various places that the inhabitants of Sydney had a basal metabolic rate of from 200 to 500 calories less than a New York type individual.

Wardlaw† found the food consumption of students 500 calories lower, than the United States figures and the difference in the basal metabolic rate less marked.

Hindmarsh‡ found that a reduction of about 10 per cent. in the basal metabolic rate for Sydney students when compared with predicted values. Physiologists in tropical countries have reported diminished metabolic rates in natives and Europeans, but contrary results have also been found by some observers.

Certainly in our practical determination of the index of comfort in factories, theatres and textile mills we find that we require a lower order of air-movement to produce comfort than is required for colder countries which we interpret to mean that the rate of heat production is less in Sydney inhabitants than in those of colder countries.

The index of comfort of the New Yorker with his cotton underwear and central heating is not the index of comfort of the wool-next-to-the-skin Britisher with open fires, and one is curious as to the physiological response of the workers in hot English cotton mills.

Practical experience shows that we may rightly ask for higher dry and wet bulb temperatures than are allowed by English regulations and lower air-movements than have been recommended for the homeland.

SECTION VI.—CAUSES OF HIGH TEMPERATURES IN TEXTILE MILLS, AND METHODS OF OBTAINING SATISFACTORY MILL CONDITIONS.

High temperatures in textile mills are due to :—

I. The energy to drive machinery which is liberated as heat.

II. Body heat of operatives.

III. Solar heat (principally by radiation).

IV Incidental heat, *i.e.*, from steam pipes (the amount of which is directly under control) lighting and location, *i.e.*, with regard steam boilers, Nobel combs, &c.

I. Practically all the energy to drive the machinery is liberated as heat in the mill, from the friction of the machinery and the textile fibres. This cannot be reduced to any great extent, except by the use of more efficient machinery, *e.g.*, the use of ball bearings. One horse-power hour is equivalent to 2,545 British thermal units of heat per hour. All this heat, however, is not dissipated into the air of the mill, but first accumulates in the machinery and is latent until the heat of the machinery is higher than that of the air in the shed. Practical experience shows that it is safe to assume that about 50 per cent. of heat from work is stored in the machinery, buildings and contents, when the mill is working for one shift only of approximately 8 hours in each day.

II. The body heat given off by the operatives varies, according to different authorities, from 300 to 900 B.T.U. per hour, and as an average figure for purposes of calculation can be taken as 500 B.T.U. per hour or approximately equivalent to one-sixth of one horse-power.

III. The amount of heat entering the building by the walls and roof on which the sun shines, cannot be determined with any accuracy. An approximate result can be found for given outside conditions by eliminating all other sources of heat, principally those of mechanical heat and keeping other conditions, particularly ventilation, the same. The rise in temperature is then determined, and knowing the amount of ventilation, the amount of heat can be readily calculated. It has also been observed that the temperature rise in a mill on a sunny day is 3 deg. to 6 deg. F. higher than on a cloudy day. This, however, is influenced by the number of air changes in the mill and also the aspect of the building, particularly the windows, the type and construction of the walls and the roof. When the temperature of a room is above that of the outside temperature, some of the heat is dissipated through the walls and the part of the roof on which the sun is not shining and the floor. For calculation, this has been estimated at 45 B.T.U. per hour for every 1 deg. F. temperature difference between inside and outside temperature for every 1,000 cubic feet of space in the mill.

IV. Each mill requires separate consideration for incidental heat.

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* Corlette, C. E. On some Relations of Climate, Weather and Fat Covering to Metabolism. Medical Journal of Australia, 1923, February 17th.

† Wardlaw, H. S. The Energy Consumption of Australian Students. Med. Jour. Australia, Sept. 9th 1922, p. 294.

‡ Hindmarsh, E. M. The Basal Metabolic Rate of Students in Sydney, N.S.W., with a discussion on methods of determining basal metabolism. Australian Journal of Experimental Biology and Medical Science, vol. 4, 1927, p. 237.

For the purpose of illustration, consider a single-storey frame spinning mill, 400-feet long, 200-feet wide, with an average height of 15 feet :—

Volume of mill 1,200,000 cubic feet. V.
Rated horse power of motors, all of which are located within the mill, 700.
Temperature of the air in the mill to be kept within 10 deg. F. of outside temperature or temperature difference. T.
Number of operatives in mill, 350.

If all motors are working at their full rated capacity with an efficiency of 84 per cent., the total B.T.U. generated per hour—

$$= \frac{700 \times 2545 \times 100}{84}.$$

$$= 2{,}120{,}833 \text{ B.T.U. per hour.}$$

Sensible heat liberated is 50 per cent., *i.e.*, 1,060,416 B.T.U. per hour H_1

Heat liberated by the operatives

$$350 \times 500$$

$$= 175{,}000 \text{ B.T.U. per hour.} \qquad H_2$$

Solar Heat : assume for the purposes of this calculation that 3 deg. F. of the temperature rise is due to solar heat, and that 5 changes of air are necessary.

B.T.U. required to raise 1 cubic foot of air 1 deg. F.

$$= \cdot 019. \qquad h$$

Hence heat from sun

$$= 5 \times 1{,}200{,}000 \times 3 \times \cdot 019$$

$$= 342{,}000 \text{ B.T.U. per hour} \qquad H_3$$

Total amount of heat from all sources liberated in the mill—

$$H_1 + H_2 + H_3 = 1{,}577{,}000 \text{ B.T.U. per hour.} \qquad H_s$$

The amount of heat dissipated through walls, floor, &c., is 45 B.T.U. per 1,000 cubic feet per hour, per degree Fah. temperature difference and with a 10 deg. F. difference is

$$10 \times 45 \times \frac{1{,}200{,}000}{1{,}000}.$$

$$= 540{,}000 \text{ B.T.U. per hour.} \qquad H_d$$

Hence heat to be carried away

$$= H_s - H_d. \qquad H_n$$

$$= 1{,}037{,}000 \text{ B.T.U. per hour.}$$

$$i.e., \; H_n = (H_1 + H_2 + H_3) - H_d.$$

The number of air changes required.

$$n = \frac{H_n}{h\,TV}.$$

For any particular mill h & V are constant and H_n can be determined and hence n.

Table IX shows the variations of n & T, *i.e.*, the number of air changes required to keep the temperature difference between inside and outside the mill (as described above) constant.

The results as shown hold for outside temperatures of between 70 deg. and 80 deg. F.

H_1	H_2	H_3	H_s	H_d	H_n	T	n
1,060,416	175,000	342,000	1,577,000	1,080,000	497,000	20	1·09
,,	,,	,,	,,	540,000	1,037,000	10	4·55
,,	,,	,,	,,	378,000	1,199,000	7	7·45
,,	,,	,,	,,	270,000	1,307,000	5	11·5
,,	,,	,,	,,	216,000	1,361,000	4	14·9
,,	,,	,,	,,	108,000	1,469,000	2	32·2

Table IX showing the relation between temperature difference between inside and outside (T) and the number of air changes (n) for the mill described where :—

H_1 = Sensible heated dissipated by machinery into mill.
H_2 = Heat given off by operatives in the mill.
H_3 = Solar heat entering the mill.
H_d = Heat conducted from inside to outside of mill.
H_s = Total amount of heat dissipated in the mill, and equals the sum of H_1, H_2, and H_3.
H_n = Heat to be carried away to give desired conditions.

It will be noticed that heat from solar radiation is one-third to one-fifth of the heat to be carried away from inside the mill according as the air changes vary from two to ten changes per hour.

The type of roof usually adopted is a saw-tooth construction, so that the skylights in the roof are not too flat and have a southern aspect, *i.e.*, the direct rays of the sun play as little as possible directly on the glass. The roof should be made of a poor conductor of heat and not galvanised iron.

At the present time the cheapest material answering requirements is fibro cement. A still better construction is a double roof with the outside of fibro cement with an air space of about 9 inches to 12 inches with suitable non-conducting lining.

The technical processes of working wool, cotton, &c., demand not only suitable temperatures, but also suitable humidities. The outside conditions of temperature and humidity are, for a great part of the summer, in Sydney, quite suitable for some of the processes, but others demand a higher humidity than is found naturally. Further, the temperature of the air on entering a mill is raised and hence the relative humidity is reduced. Take the case of the mill previously considered and not using humidification :

If the outside conditions are	Dry bulb	78° F.
,, ,, ,,	Wet ,, ...	65° F.
,, ,,	Relative humidity	50 per cent.
,, ,	Absolute ,, ...	5·13 grains per cubic foot.

The inside conditions will approximately be	Dry bulb (with 10° F. rise over outside) ...	88° F.
	Wet bulb	69° F.
	Relative humidity ...	37 per cent.
	Absolute ,, ...	5·16 grains per cubic foot.

The problem of ventilating a mill without humidification to produce a given temperature irrespective of humidity is a comparatively simple matter.

When humidification is introduced for cooling purposes there are other varying factors owing to the cooling effect of the evaporation of the water, so that in making calculations certain assumptions have to be made and the required results obtained by trial and error.

This is best illustrated by taking a particular example. Consider a mill with the same dimensions and particulars as before :—

On a summer day when there is a hot dry westerly wind. The conditions on this day in an extreme case would be :—

Dry bulb	100° F.
Wet ,, ...	67° F.
Relative humidity	15 per cent.
Absolute ,, ...	2·96 grains per cubic foot.

Inside conditions required are, temperature as low as can be obtained and relative humidity of 55 per cent.

First consider the case where the cooling effect produced by humidification is just sufficient to keep the mill at a temperature of 100° F.

Under the above conditions it will be found that the air change must be low.

Consider one air change per hour.

Heat to be neutralised=1,577,000 B.T.U. per hour. (See Table IX.)

Amount of water to produce this cooling effect $= \frac{1,577,000}{1,052}$

$= 1,495$ lbs.

(One pound of water produces a cooling effect of 1,052 B.T.U. per hour.)

Hence the increase in humidity would be $\frac{7,000 \times 1,495}{1,200,000}$ grains.

(7,000 grains equals 1 lb.) ... $= 8·72$ grains per cubic foot.

Inside absolute humidity would be $2·96 + 8·72 = 11·68$ grains per cubic foot, *i.e.*, inside conditions would be :—

Dry bulb	100° F.
Wet ,, ...	87° F.
Relative humidity	59 per cent.
Absolute ,, ...	11·68

But this relative humidity is too high. Using two changes per hour the conditions would be :—

Dry bulb	100° F.
Wet ,, ...	78° F.
Relative humidity	37 per cent.
Absolute ,, ...	7·32 grains per cubic foot.

By evaporating a further quantity of water :—

(1) The dry bulb would be reduced.

(2) The relative humidity would be increased due to the decrease in the dry bulb, and the increase in the absolute humidity caused by the moisture which would be evaporated.

(3) The amount of heat to be neutralised would be increased owing to the decrease in the inside dry bulb (causing absorption of solar heat by the mill).

(4) To reduce the temperature to 90° F. the amount of water required would be—

$$\frac{\cdot019 \times 2 \times 1{,}200{,}000 \times 10 \text{ lb.}}{1{,}052}$$

$$=433 \text{ lb., } i.e., \text{ a further increase in humidity of } \frac{433 \times 7{,}000}{2 \times 1{,}200{,}000} \text{ grains per cubic foot.}$$

$$= 1\cdot26 \text{ grains per cubic foot.}$$

i.e., conditions would now be :—

Dry bulb	90° F.
Wet ,,	78° F.
Relative humidity	58 per cent.
Absolute ,,	7·32 + 1·26 = 8·58 grains per cubic foot.

Owing to the temperature of the mill being lower than the outside, the solar heat is increased, which means that a set of new conditions would exist, but which would only cause a slight increase in the inside temperature and a reduction in the relative humidity, and, as more water is atomised, an increase in the absolute humidity. The results can be approximately summarised as follows :—

Outside conditions	—Dry bulb	100° F.
,, ,,	Wet ,,	67° F.
,, ,,	Relative humidity	15 per cent.
,, ,,	Absolute ,,	2·96 grains per cubic foot.

Using two air changes per hour, water to be evaporated = 2,000 lb. (approx.). :—

The inside conditions would be	—Dry bulb	92° F.
,, ,, ,,	Wet ,,	79° F.
,, ,, ,,	Relative humidity	55 per cent.
,, ,, ,,	Absolute ,,	8·67 grains per cubic foot.

The methods of humidifying the air have been discussed in Section III.

A chamber humidifier could not evaporate all the water required as the air can in practice only be cooled to within about 3° F. of the wet bulb which in this case would be 70° F.

With two changes of air the amount of water which could be evaporated in a chamber humidifier would be—

$$\frac{2 \times 1{,}200{,}000 \; (6\cdot86 - 2\cdot96)}{7{,}000}$$

at 70° F—Dry Bulb
67° F.—Wet Bulb
= 1,337 lb.

where 6·86 grains is the absolute humidity.

It is evident that a chamber humidifier working without re-circulation is not sufficient for the conditions detailed so that atomisers would have to be used to make up the deficiency or atomisers would have to be used solely.

If atomisers only were used each with a capacity of 5 lb. of water per hour, the number required would be 400 for our hypothetical mill or one for every 200 square feet of floor space when the air was changed twice per hour.

Probably the sealed mill of which we have written would get two changes of air per hour by crevice ventilation due to the high vapour pressure in the mill.

SECTION VII—SUMMARY.

Following the request by a manufacturer engaged in certain woollen processes requiring high temperatures and humidities for permission to exceed the present scale of humidity, the atmospheric conditions of textile mills of Sydney were investigated.

An endeavour was made to ascertain the atmospheric conditions necessary to make work at high temperatures and humidities reasonably comfortable for acclimatised and suitably clothed male and female operatives.

The wool processes which require high temperatures and humidities are the French system of mule spinning and dry combing, the optimum conditions for these operations being a dry-bulb temperature of 80° F. and a relative humidity of 70 per cent.

The frame spinning of worsteds proceeds satisfactorily at the same dry-bulb temperature and a relative humidity of 50 per cent.

The character of the mill buildings and the mill atmospheric conditions experienced have been recorded. At temperatures above 75° F. the rise in mill temperatures varied from 12° F. to 0° F., and the average air movement varied from 25 to 80 feet per minute.

The climatic conditions of Sydney as related to the textile industry are discussed.

The index of comfort in textile mills is reviewed under the headings of clothing, air movement, temperature and humidity and acclimitization.

The causes of high temperatures in textile mills are stated and methods of obtaining satisfactory mill conditions are considered.

It is concluded that it is necessary to re-cast the regulations governing the use of artificial humidity in factories in New South Wales, and to provide for an air movement which increases *pari passu* as the temperature and humidity of the atmosphere.

The air movements required at lower humidities closely approximates those asked for by one of the authors in a previous investigation in 1924.

It is proposed for the present to place processes requiring the use of artificial humidity in two classes : Class I to include those processes requiring not more than 55 per cent. relative humidity at 75° F. dry bulb, and Class II includes those processes requiring humidity above 55 per cent. at 75° F. dry bulb.

The use of natural ventilation in frame spinning would be encouraged by making a special exemption for dry days.

The air movements required vary in Class I mills from 20 feet per minute at 80° F. to 90 feet per minute at 90° F., and in Class II mills from 45 feet per minute at 80° F. to 420 feet per minute at 100° F. The air movements correspond to a wet kata of 14.

The permitted increase in temperature in factory buildings is considered.

It is advised that no person, male or female, under the age of 16 be employed in processes which are placed in Class II.

Appendix I.

Two nomograms by Leonard E. Hill, Angus and Newbold, for the determination of air movement from the wet and dry Kata, have been published as an appendix to "Report of the Departmental Committee on Artificial Humidity in Cotton Cloth Factories," 1928.

We have reproduced these nomograms which we have found most useful in our work. The original nomograms showed temperatures in Centigrade and Fahrenheit, and velocities in metres per second and feet per minute. In the reproduction we have omitted the centigrade and metre scales, and in the directions have deleted references to these scales.

Directions for using the Dry Kata Nomogram.

The nomogram connects the three variables, dry kata reading, dry bulb temperature, and velocity.

To read off any one of these join the observed values of the other two by a straight edge, and read off the required value at the point where the straight edge cuts the third scale.

If scale A has to be used for the temperature, scale A must also be used for the kata, and if scale B is used temperature, scale B must also be used for the kata.

The temperatures are in Fahrenheit, and the velocities in feet per minute.

The nomogram has been drawn from the equation :—

$$H = (0{\cdot}020116\sqrt{V} + 0{\cdot}05862)\,(97{\cdot}7 - T)$$

where V = air velocity in feet per minute.
and T = dry bulb temperature in ° Fah.

The observations on which this equation was based only extend over the following ranges ... ...
- Air velocity 60·0 feet per minute to 1,040 feet per minute.
- Dry bulb 32 ° Fah. to 112 ° Fah.
- Relative humidity 28 to 95 per cent.
- Barometer 735 mm. to 760 mm.

and extrapolations beyond these ranges should not be made. These equations can only be taken as approximate, not as exact, as the observations on which they are based are subject to experimental error which is greater in the case of the wet kata than in that of the dry.

Directions for using the Wet Kata Nomogram.

The nomogram connects the three variables, wet kata reading, wet bulb temperature (ventilated), and air velocity.

To read off any of these join the observed values of the other two by a straight edge, and read off the required value at the point where the straight edge cuts the third scale.

If scale A has to be used for the temperature, scale A must also be used for the kata, and if scale B is used for temperature, scale B must also be used for the kata. The temperatures are in Fahrenheit, and the velocities in feet per minute.

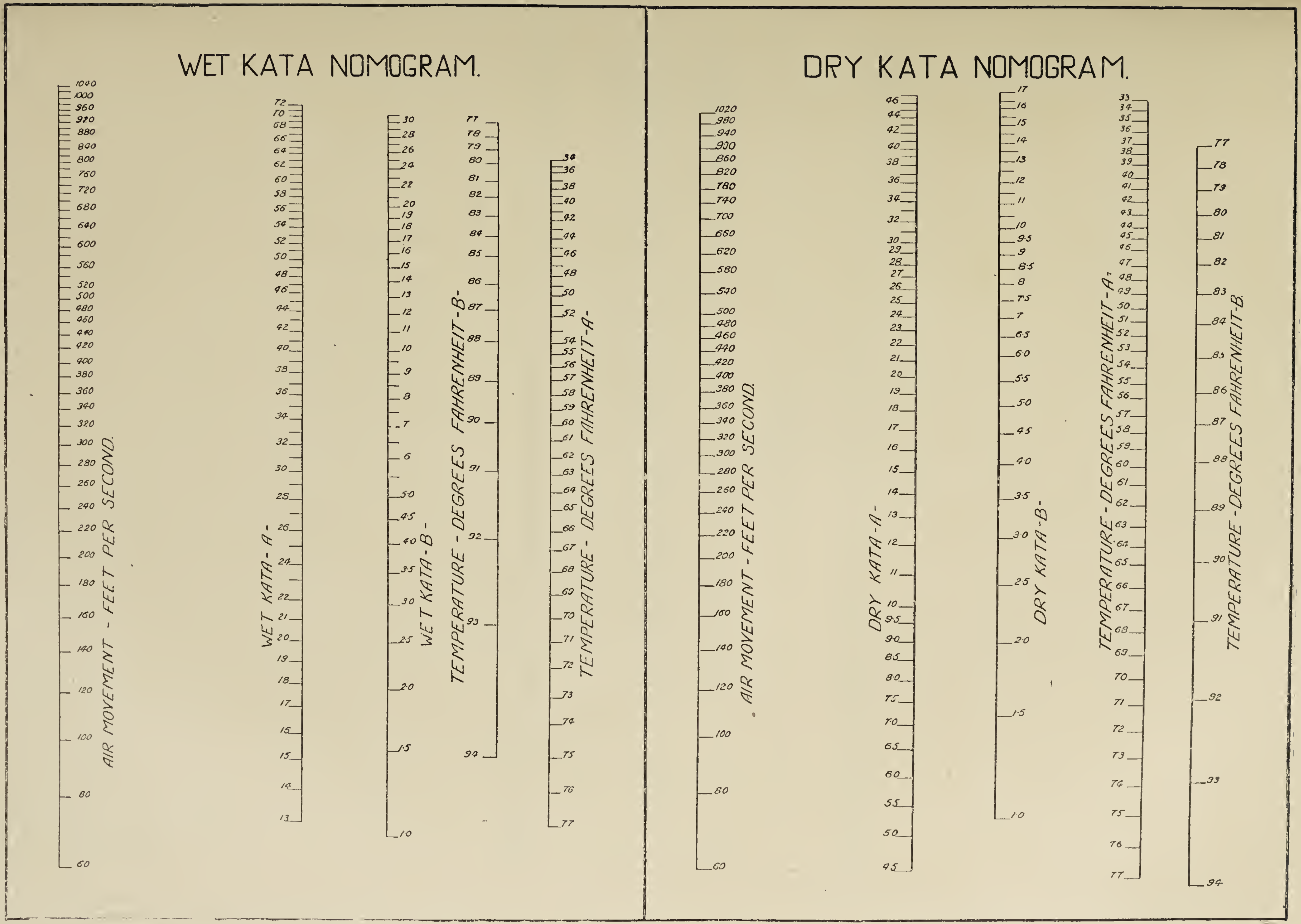
The nomogram has been drawn from the equation :—

$$H^1 = (0{\cdot}1347\,V^{0{\cdot}4} + 0{\cdot}268)\,(36{\cdot}08 - 0{\cdot}2766T_1 + {\cdot}00261T_1^2 - 0{\cdot}0000383\,T_1^3)$$

where V is tho air velocity in feet per minute, and
T_1=the wet bulb temperature in deg. Fah.

The observations on which this equation was based only extend over the following ranges ... ..
- Air velocity 60·0 feet per minute to 1,040 feet per minute.
- Dry bulb 32 ° Fah. to 112 ° Fah.
- Wet bulb 32 ° Fah. to 92·5 ° Fah.
- Relative humidity 28 to 95 per cent.
- Barometer 735 mm. to 760 mm.

and extrapolations beyond these ranges should not be made. These equations can only be taken as approximate, not at exact, and the observations on which they are based aro subject to experimental error which is greater in the case of the wet kata than in that of the dry.



Charts constructed by Hill, Angus, and Newbold from formulae determined by them, which connect the three variables dry or wet kata readings, dry or wet bulb temperaures and air movement. For directions for use see Appendix I.

SECTION II.

1928.

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SECTION II.

1.—Metropolitan Combined Sanitary Districts of Sydney.

Report of the Medical Officer of Health for the Year 1928.

J. S. Purdy, D.S.O., M.D., C.M.(Aberd.), D.P.H.(Camb.), F.R.S.(Edin.), F.R.San.I.

To the Director-General of Public Health.

Sir,

I have the honor to report on the health conditions of the Combined Sanitary Districts of the Metropolitan Area of Sydney for the year 1928. Both the death-rate and the infantile mortality rate were lower than those of the previous year.

The Metropolitan Combined Sanitary Districts for the purposes of health administration consist of the Metropolis and Extra-Metropolitan District.

The Metropolis proper or "Sydney and Suburbs" includes the City of Sydney, forty municipalities and Ku-ring-gai Shire.

The extra Metropolitan District is separately dealt with statistically and includes twelve municipalities and two shires.

The population of the Metropolis Proper (Sydney and Suburbs) was estimated by the Government Statistician to be 1,127,470 on 31st December, 1928, of which the City of Sydney contained 110,000, an increase of 9,360, and the suburbs, 1,017,470, an increase of 15,920 for the year. The annual rates of increase between the last four census was 2·33 per cent. from 1891 to 1901, 2·69 per cent. from 1901–1911, and 3·60 from 1911 to 1921. The annual rate of increase for twenty years up to 1921 was 3·15 per cent.

Summary of Vital Statistics for 1928.

Metropolitan Combined Area, 442,981 acres (692⅙ square miles). Population (estimated to the middle of the year, 1,278,130) on 31st December, 1928, 1,290,740, an increase during the year of 33,020, equivalent to 2·62 per cent..

Births, 24,762 (birth-rate 19·40).

Deaths, 12,185 (death-rate, 9·55).

Death of infants under 1 year of age, 1,251 (infantile mortality rate, 50·52 per 1,000 births).

Births (21,151).—Of the total, 10,910 were males and 10,241 females, the proportion being 107 males to 100 females. The number of births was 783 above that of the previous year. The birth-rate for 1928 was the lowest recorded for the Metropolis since 1918. As a general rule, the birth-rate declines as the standard of comfort, convenience, and earning power of the community increases.

The number of ex-nuptial children born during the year was 1,226, or 5·80 per cent. of the total births, equivalent to 1·10 per 1,000 of the population, which rate is 10·7 per cent. below the average of the previous five years. Of these 98 per cent. were born in public institutions.

In the Extra Metropolitan District 3,611 births were registered during the year, equivalent to 23·50 per 1,000 of the population. Included in the total were 161 ex-nuptial births, or 4·96 per cent. of the total, equivalent to 1·05 per 1,000 of the population.

Table I.

Showing Population, Density of Population, and certain Death-rates in the Municipalities of the Metropolitan Combined Sanitary Districts for 1928, including deaths which have occurred in General Hospitals, Special Hospitals for Consumption, and Hospitals for the Insane. Deaths occurring in Hospitals in the Metropolis have been distributed to their proper districts before calculating these rates.

Municipality.	Estimated Mean Population, 1928	Mean Density of Population to the acre.	Death Rate per 1,000 of Population.				
			All Causes.	Diarrhœal Diseases, including Enteritis.	Epidemic Diseases.	Tuberculosis of Respiratory System.	All Tubercular Diseases.
City of Sydney	109,830	33·9	11·78	·22	·34	·88	·81
Alexandria	10,220	9·7	10·27	·48	·58	·89	·89
Annandale	13,020	37·6	9·52	·53	·29	·61	·76
Ashfield	39,060	19·1	9·77	·48	·35	·66	·82
Balmain	32,950	33·7	11·70	·30	·51	·79	·94
Bexley	19,140	10·0	7·16	...	·15	·26	·41
Botany	7,260	3·4	10·19	·13	·68	·13	·13
Burwood	18,870	17·0	11·28	·74	1·00	·26	·31
Canterbury	67,210	8·1	7·62	·25	·35	·32	·35
Concord	20,950	7·7	6·48	·23	·52	·28	·28
Darlington	3,660	67·8	8·28	·54	·54	·81	·81
Drummoyne	27,550	14·1	7·80	·10	·14	·58	·72
Eastwood	2,780	0·9	13·31	...	·36	1·44	2·16
Enfield	13,380	8·0	7·76	·41	·44	·44	·52
Erskineville	7·590	40·8	9·48	1·18	·13	·39	·52
Glebe	23,050	44·5	10·45	·34	·52	·69	·69
Homebush	2·990	5·0	18·39	·66	1·00	·33	·33

TABLE I—*continued.*

SHOWING Population, and certain Death-rates in the Municipalities of the Metropolitan Combined Sanitary Districts for 1928—*continued.*

Municipality.	Estimated Mean Population 1928.	Mean Density of Population to the acre.	Death Rate per 1,000 of Population.				
			All Causes.	Diarrhœal Diseases, including Enteritis.	Epidemic Diseases.	Tuberculosis of Respiratory System.	All Tubercular Diseases.
Hunters Hill	9,360	6·6	7·63	·42	·21	·10	·10
Hurstville	19,860	3·2	9·72	·60	·50	·30	·50
Kogarah	26,970	5·7	8·35	·22	·26	·48	·55
Ku-ring-gai	25,940	1·3	6·55	·06	·27	·58	·58
Lane Cove	14·100	5·5	5·46	·07	·14	·28	·42
Leichhardt	31,090	26·9	9·59	·32	·57	·35	·51
Manly	25,310	9·0	9·32	·39	·14	·27	·35
Marrickville	45,920	24·3	9·94	·17	·15	·54	·56
Mascot	13,050	5·9	7·88	·15	·38	·45	·45
Mosman	24·360	11·4	7·87	·08	·41	·32	·36
Newtown	28·520	59·4	11·05	·38	·42	·85	·91
North Sydney	54,210	21·4	8·79	·18	·16	1·70	1·95
Paddington	26·940	64·0	12·35	·41	·41	·59	·63
Petersham	27,710	32·6	10·18	·19	·28	·54	·60
Randwick	10,810	8·3	8·68	·13	·32	·59	·62
Redfern	24,110	59·7	12·15	·66	·49	·83	·99
Rockdale	35·000	6·9	7·23	·14	·11	·34	·39
Ryde	23,450	3·4	8·28	·08	·42	·59	·76
St. Peters	13,680	15·2	9·50	·36	·07	·29	·36
Strathfield	11,600	6·5	5·86	·08	·60	·34	·51
Vaucluse	6·880	8·6	8·14	·14	·14	·29	·29
Waterloo	12,300	14·9	11·3	·40	·24	1·05	1·13
Waverley	50,780	23·2	8·49	·11	·13	·51	·57
Willoughby	40,640	7·4	7·99	·24	·36	·36	·36
Woollahra	33,310	17·7	10·02	·12	·27	·27	·27
Total Metropolis	1,115,400	9·6	9·33	·26	·33	·52	·60
Auburn	18,910	Not computed on account of the population being confined to small areas with large unpopulated spaces surrounding.	8·13	·62	·20	·36	·41
Bankstown	19,730		8·82	·55	·30	·65	·70
Cabramatta and Canley Vale	4,430		12·15	·22	...	·15	·18
Dundas	5,190		4·99	...	·19	·38	·38
Ermington and Rydalmere	2,090		22·94	·47	...	·47	·47
Fairfield	7,320		10·24	·27	...	·81	·95
Granville	18,000		10·89	·95	·50	·50	·50
Holroyd	13,460		7·72	·07	·22	·88	·96
Ingleburn	1,550		7·09	...	...	...	...
Lidcombe	14,680		21·86	·40	·40	1·77	1·97
Liverpool	6,030		14·59	·66	·16	·66	·66
Parramatta	16,970		13·48	·53	·17	·64	·70
Hornsby Shire	19,670		9·47	·35	·50	1·17	1·27
Warringah Shire	14,700		8·16	·27	·27	·40	·40
Total	162,730	...	10·91	·46	·28	·78	·91
Total combined Metropolitan Sanitary Districts	1,278,130	9·53	9·53	·28	·33	·56	·63

Deaths.—The recorded deaths in the metropolis for 1928, after correction and including those for institutions, totalled 10,408, equivalent to a rate of 9·33 per 1,000 of the population. The number of children under one year of age who died was 1,042, or 49·3 per 1,000 births. The average death-rate for the past eight years was 8·94, the lowest recorded for any city with a population of half a million, whilst the infantile mortality was 58 per 1,000 births.

The number of persons aged 65 and over who died in 1928 was 3,939, or 7·8 per cent. of the total deaths. Of these, 112 were aged 90-94, 6 were 95, 5 were 96, 6 were 98, 2 were 99 and 2 100.

Diseases of the Heart.—An analysis of the chief causes of death in the metropolis shows that the group *Diseases of the Heart* again occupies the premier position, accounting for 1,905 deaths, or a rate of 172 per 100,000.

In Sydney in 1903, heart diseases formed 8 per cent.; in 1913 nearly 9 per cent.; in 1923 and in 1926 15 per cent.; and in 1927 and 1928, as much as 18 per cent. of the total deaths.

As to sex, there were 911 deaths from heart disease among females to 994 among males.

Twenty-five males and 27 females under 25 years of age died from heart disease. 60 males and 30 females from 25 to 40, and 605 males and 527 females from 40 to 75 years.

Occupation is the main factor in the difference in the rates in men and women.

With regard to rheumatic affections, the great congener of heart disease, chronic rheumatism, chronic arthritis, rheumatoid and osteo-arthritis, and gout with rheumatic fever, only accounted for 57 deaths, or 5·1 per 100,000, a total increase of 17 on the previous year. Of these deaths, 35 were due to acute rheumatic fever, 16 of which (7 males and 9 females,) occurred between 5 and 19 years of age. There were three deaths from rheumatic fever between 35 and 40 years of age.

The fact that 87 men and 37 women died from angina pectoris also illustrates the greater frequency of degenerative changes in the arteries of the male than the female in later life. Syphilis and alcoholism are recognised as frequently causing degenerative changes, both of the heart and arteries.

In 1928, 17 men and 8 women were reported to have died from syphilis, and 13 men and 8 women from alcoholism (acute and chronic). The practice of an annual medical examination (which is coming into vogue in U.S.A., as the result of an extensive propaganda for the reduction of heart, kidney and other diseases) should be encouraged here.

Already one Insurance Company in Australia has found that expenditure on health propaganda and the provision of nursing has been an excellent investment, not only in bringing increased business, but in lowering the age of the incidence of death among their clientele.

Cancer, the cause of which still baffles the most intensive and extensive research, caused 1,177 deaths (548 males and 629 females) in the metropolis, and 187 in the outside metropolitan districts. As usual, 60 to 70 years of age was the most fatal period in both sexes. As to the site of the disease and the importance as an aetiological factor of chronic irritation, it is noted that only 5 females died from cancer of the buccal cavity (mouth), in contrast to 61 males so affected, which is suggestive of smoking as a possible source of irritation.

Cancer of the genital organs and of the breast caused 227 deaths of women over 40 years of age.

The fact that 143 males and 77 females were recorded as dying from cancer of " other or unspecified organs " suggests either the need of a more extensive tabulation of the deaths as to the site of the disease, or that there is still considerable carelessness in filling in death certificates.

Pneumonia comes third in the list with 791 deaths, of which 281 were from broncho-pneumonia (males 139, females 142); and 509 (males 288, females 221) from pneumonia (other). It is suggested that inhalation of dust in certain occupations and indulgence in alcohol are the main factors in the differences in sex incidence over 30 years of age.

Bright's Disease (acute and chronic) claimed 668 victims. Acute nephritis (including 4 unspecified under 10 years of age) accounted for 11 males and 12 females; chronic nephritis for the deaths of 351 males and 294 females. Between 40 and 65 years of age there were 151 deaths of males from chronic nephritis to 119 females. The excess of deaths in males one ascribes to occupation, drinking, and overeating, especially of meat.

Tuberculosis.—The number of deaths from all forms of tuberculosis in the metropolis proper during 1927 was, according to the Government Statistician, 672, of which 587 were due to tuberculosis of the lungs, 28 to tubercular meningitis, and 57 to other tubercular diseases. These figures include deaths of former metropolitan residents which occurred at Waterfall Sanatorium and other institutions. (From the beginning of 1927 deaths have been allocated by the Government Statistician to the locality in which the deceased permanently resided.) During the past forty years there has been a reduction of the death rate of pulmonary tuberculosis by more than half. Whilst intensive propaganda in the prevention of tuberculosis, together with instruction in Sanatoria, must have had some effect in improving the general condition of the people; I am convinced that better housing, especially the elimination of dampness, increased wages, shorter hours of labour, better feeding, an all-round better standard of living, and above all, more appreciation of living and sleeping in the open air, have all contributed to the ever improving record.

Deaths from Accidents.—It is an indictment against our modern conditions of living that the next most common cause of death is that due to accidents. In 1928 no less than 540 persons (416 males and 124 females) were fatally injured.

Accidents from railways and tramways caused 33 deaths (all males); vehicles and horses, 9 (males); motor vehicles, 166 (127 males, 39 females); burns, 36 (17 males, 19 females); drowning, 45 (41 males, 4 females); falls, 123 (83 males, 40 females).

It has been estimated that 65 per cent. of all accidents are due to negligence, lack of thought, and, above all, lack of appreciation of danger.

The frequency of electrical burns and shock suggests that everyone should at least know how to remove a person from a live wire and how to resuscitate by the simple Schafer method.

Cerebral Hæmorrahage accounted for the deaths of 171 males to 214 females, the total of 385 being a decrease of 181 on that of the previous year.

Deaths from Epidemic Diseases.

Measles.—There was a marked increase in the number of deaths from measles. Whereas there were two deaths in 1927, there were ninety deaths in 1928. The average for the previous five years was 25. The sex distribution was 48 males, 42 females, 33 being under one year of age.

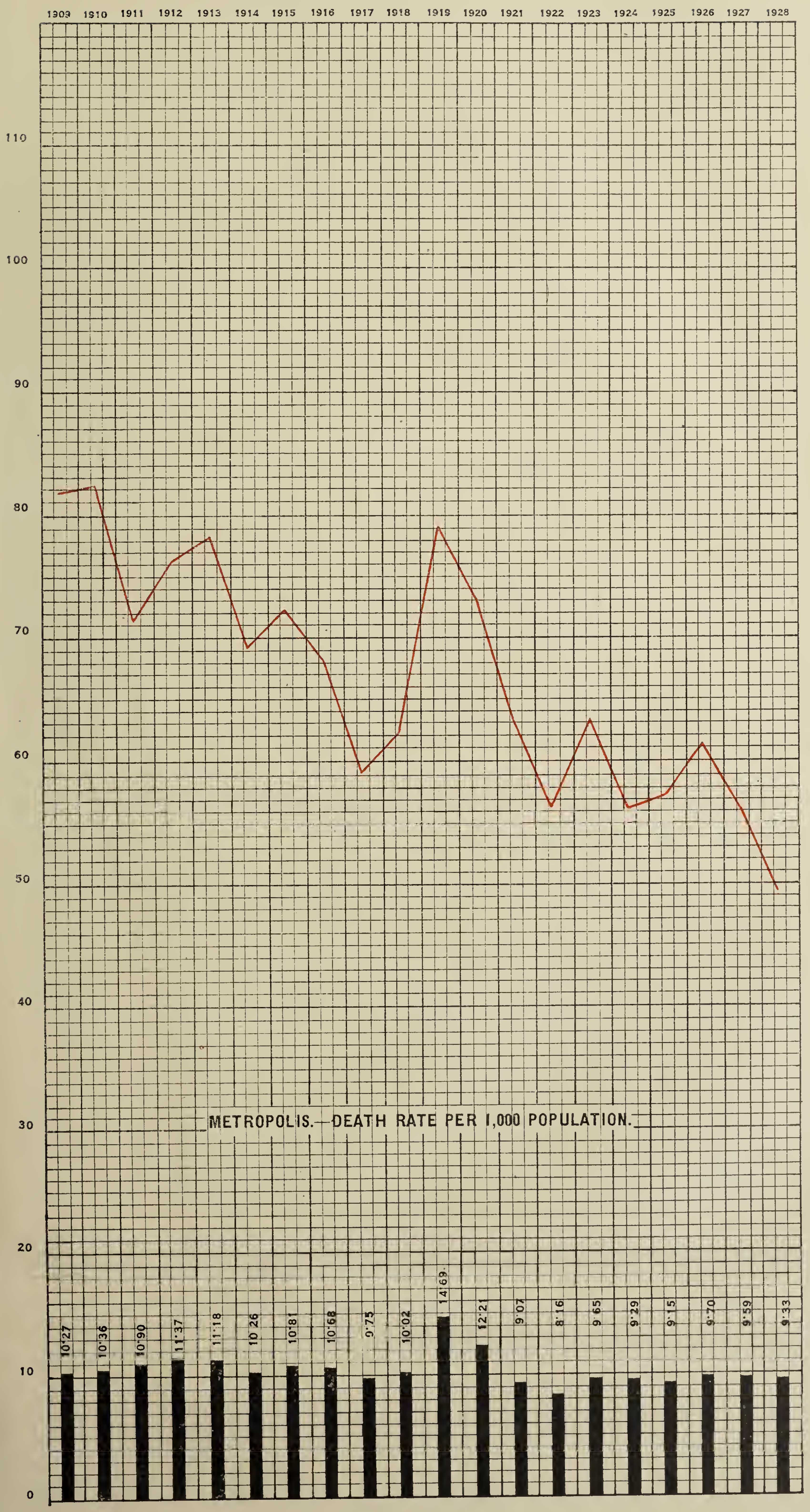
Whooping Cough accounted for 24 deaths, 85 less than in 1927. Under one year of age in 1927 there were 9 males and 7 females died from whooping cough; under five years of age the deaths were equal to 17 males and 7 females.

The work of district nurses, school nurses, and nurses at baby welfare centres should be co-ordinated into community health centres, one feature of which would be intensive propaganda for the protection of the pre-school child, who as far as organised care by institutions is concerned, is nobody's bairn. It is important to bridge the gap between the baby health clinic and the school clinic.

Scarlet Fever.—There were 63 deaths from scarlet fever in 1928. This was an increase of 10 on the number for the previous year, which was six times the average for the preceding five years. To get similar numbers of deaths from scarlet fever in the metropolis we had to go back to 1915, 1916, and 1902–1903. On the estimated mean population of 1,115,400 the death rate per thousand works out at ·006 or 6 per 100,000 of population in contrast to 20 per 100,000 in England, where the death-rate for scarlet fever has fallen from 1·2 in the sixties of last century to ·02 per 1,000 in 1924.

Scarlet fever, like other infectious diseases spread by droplet infection, appears to run in cycles, and, apparently, as to its incidence is quite independent of the thoroughness or otherwise with which it is controlled. The suggestion that contacts should not be kept away from school but be examined daily

METROPOLIS.—DEATHS UNDER 1 YEAR PER 1,000 BIRTHS.


METROPOLIS.—DEATH RATE PER 1,000 POPULATION.

during the incubation period, is supported by experiences in England. Probably the safest course is removal to hospital where there is not nursing facilities at home, with exclusion of contacts from school. Reports are favourable as to the curative properties of anti-scarlatina serum.

Diphtheria.—There were 74 deaths from diphtheria in 1928, 7 more than in 1927, and two above the average for the previous five years.

Influenza, in 1928 with 76 deaths to its credit, showed a decrease of 5 on the record for the previous year, which was 36 above the average for the previous five years.

Infantile Paralysis caused no deaths in contrast to 1 for the previous year.

Epidemic Cerebro-spinal Meningitis.—5 deaths, the average being 9·6 for the previous five years.

Encephalitis Lethargica accounted for 10 deaths, in contrast to 15 deaths in 1927, and an average of 16 for the previous five years.

Typhoid Fever, with 15 deaths in 1928, showed a decrease of 4 on the toll for the previous year, when the decrease was 41 per cent. on the average of 39 for the previous five years.

The infectious diseases to show decreases were whooping-cough, epidemic cerebro-spinal meningitis, typhoid, scarlet fever, and diphtheria. Measles, influenza, and infantile paralysis showed an increase.

Diabetes accounted for 138 deaths, a decrease of 20 on the number for 1927, and a decrease of 5 on the average of the five years previous thereto. As noted in previous years, the majority of the deaths occurred in the sixth decade of life, later on the average than in England and the United States. Previously I have emphasised the sex incidence of this disease in so far as it has been a more frequent cause of death among women than in men in Sydney. The usual incidence in England and the United States was in ratio of 3 men to 2 women, but in Sydney the reverse obtains. In 1928 the deaths were from diabetes 85 females to 53 males.

Diarrhœa and *Enteritis* accounted for 231 deaths of children under 2 years, an increase of 23 on the record of the previous year, but a decrease of 126 on the average of 357 for the previous five years. There were 61 deaths from diarrhœa and enteritis at 2 years and over, a decrease of 17 on the number for 1927, whilst the average for the five years previous to 1926 was 81.

Maternal Mortality.—In 1926 there were only 30 deaths in childbirth from puerperal septicaemia, 27 per cent. below the average of 41 for the previous five years. There were 43 deaths from puerperal septicaemia in 1928, 19 of which occurred in cases of abortion and miscarriage. Puerperal albuminuria and convulsions accounted for 27 deaths, a reduction of 4 on the previous year. Puerperal hæmorrhage caused 17 deaths, 4 more than in the previous year. Other accidents of labour were credited with 4 deaths, 7 less than in the previous year. In the metropolis 77 deaths of women either in childbirth, or immediately associated therewith, of 3·64 per 1,000 births, or 1 per 1,000 below the lowest previous record, that of 1926. In the above figures are not included deaths from ectopic gestation, 6; "other accidents of pregnancy," 4; rom illegal operations, 17, or 4 from abortion.

Infantile Mortality.—The deaths of infants under one year of age in the metropolis, as recorded by the Government Statistician during 1928, numbered 1,042, whilst the births numbered 21,131, giving an infantile mortality rate of 49·3 per 1,000 births. This is the most gratifying feature of this year's report as it marks the first year with an infantile mortality rate below 50 per 1,000. Of the deaths in 1928 associated with infantile mortality, the most marked decrease was from pneumonia, from which there were 108 deaths, 38 less than in 1927. Of the total of 1,042 deaths in the first year of life, no less than 440 occurred in the first week, and a total of 556, or more than half, in the first month. This persistent high mortality in the first month is experienced even in those parts of the world where highly organised schemes for dealing with maternal and infant welfare are in operation. In many places intensive study is now being made of the factors leading to this excessive neonatal mortality with the object of bringing about its reduction.

The accompanying graph shows the infantile mortality rate during the period 1909-28.

TABLE 2.

(*a*)—Showing Deaths of Infants under 1 year of age in the Metropolis from various causes, 1919–28.

Cause of Death.	1919.	1920.	1921.	1922.	1923.	1924.	1925.	1926.	1927.	1928.
Measles	1	20	3	1	6	2	1	8	1	23
Whooping-cough	17	121	27	24	24	16	68	37	70	16
Diphtheria	6	11	1	10	12	5	10	10	8	8
Influenza	42	6	7	1	9	4	6	3	5	3
Cerebro-spinal meningitis	3	2	1	3	2	6	2	5	3	2
Tuberculous meningitis	4	1	9	8	2	3	1	4	4	2
Other tuberculous diseases	1	3	5	2	2	1	2	3	2	5
Meningitis	8	7	14	10	19	19	12	15	17	12
Convulsions	22	22	18	15	11	13	12	25	19	5
Other nervous diseases	6	8	4	1	2	3	1	8	4	2
Bronchitis	18	26	20	21	29	17	18	10	13	13
Pneumonia	124	126	101	132	129	138	132	97	146	108
Other respiratory diseases	8	12	6	2	2	4	3	1	5	7
Diseases of the stomach	8	11	12	6	6	5	5	6	8	3
Diarrhœa and enteritis	411	443	385	257	407	224	191	248	163	181
Intestinal obstruction and hernia	19	10	17	7	8	9	9	15	5	6
Bright's disease	3	...	2	2	...	5	...	1	1	...
Prematurity	409	440	379	362	379	382	354	386	313	320
Other developmental diseases	307	319	332	351	299	237	282	287	285	268
Accident	10	12	9	7	10	13	11	7	13	8
All other causes	56	58	52	57	47	156	66	67	76	50
Total	1,483	1,658	1,414	1,279	1,405	1,262	1,186	1,243	1,161	1,042

Scarlet Fever.—The graph shows how there are periods of comparative quiescence followed by periods of increased incidence over periods averaging usually five years.

In Australia there has been increased incidence of scarlet fever without increased mortality of late years. It is also apparent that notification, isolation, and disinfection have failed to prevent the spread of scarlet fever.

We have not sufficient experience of Dick testing and immunization in this State to draw any conclusions. Experience in other centres, however, indicates that this is our most rational system of combating epidemics, especially in boarding-schools and institutions.

Diphtheria.—The incidence in the metropolis in 1928 showed a decrease of 63 cases on that of the previous year.

The death-rate of ·06 per 1,000 was on a par with that of the previous year, the lowest recorded with the exception of ·04 in 1912.

Typhoid Fever—Incidence.—With 113 cases notified in the metropolis in 1928, there was a decrease of 20 cases on the number for the previous year. The attack rate of ·10 per 1,000 is the lowest yet recorded in the metropolis. No cases were reported from Alexandria, Annandale, Ashfield, Balmain, Darlington, Eastwood, Erskineville, Leichhardt, Mascot, Newtown, Petersham, St. Peters, and Willoughby.

Mortality.—There were 15 deaths, 4 less than in the previous year, whilst the case fatality was 13·27 per cent. The marked reduction of the morbidity and mortality from typhoid fever in the metropolis of Sydney is an index of the progress of communal hygiene and sanitation.

In the extra metropolitan districts in 1928 there were 24 cases of typhoid, but no deaths therefrom.

Most of the extra metropolitan districts, and unfortunately large portions of the metropolis, are still without the modern convenience of a water carriage system of sewerage, the extension of the sewerage not having kept pace with the phenomenal increase in population.

The position can be readily understood, as for example in the large industrial suburb of Canterbury, with a clay soil and with many open ditches and trenches, 13,500 sanitary pans have to be removed each week.

Other industrial suburbs without sewerage and with little prospect of early extensions are Auburn, Lidcombe, Bankstown, Rockdale, and Kogarah.

Credit is due to the Metropolitan Water, Sewerage, and Drainage Board for the acceleration of the work since its reconstitution. The mileage of sewers provided per year averages now 86, in contrast to 35 during the previous regime.

During 1928 there were constructed 130 miles of sewers, nearly double the highest record of any previous year. One would, however, like to see this figure doubled in order to give sewerage to the people within a reasonable period. Already £198,960 have been spent on the Auburn, Lidcombe, Granville sewerage, and a further £377,000 is earmarked for the continuance of the work there. The main ocean outfall sewer should be ready to receive the sewage from these districts by the end of 1930.

A careful investigation was made of an outbreak of typhoid fever in Fairfield Municipality. About Christmas, 1921, a married daughter of a Mrs. C. died of typhoid in Prince Alfred Hospital. In November, 1923, Mrs. M., another married daughter, a grandson, and Mrs. C. herself contracted typhoid. A son of Mrs. C. who visited Mrs. C. at Christmas, 1923, developed typhoid. In 1926, another daughter, unmarried, living with her mother, went down with typhoid. Two samples of stools examined this time from the mother, Mrs. C., proved negative. On 19th December, 1927, another son, G.C., was sent to the Coast Hospital with typhoid, and by the end of the month another son, W.C., was also admitted with typhoid. Four of the five sons had been inoculated during the war, one of whom developed typhoid eight years after inoculation. Ultimately, after a third examination, B. typhosis was isolated from the faeces of Mrs. C. Precautions have been taken as in a case of typhoid, and no further cases have been associated with Mrs. C., an intermittent typhoid carrier.

Pulmonary Tuberculosis.—For the Metropolitan Combined Sanitary District 1,060 cases of pulmonary tuberculosis were notified during 1928, an increase of 72 on the number for the previous year. Of those notified, 657 were males and 403 females; 76 cases were notified from the city proper.

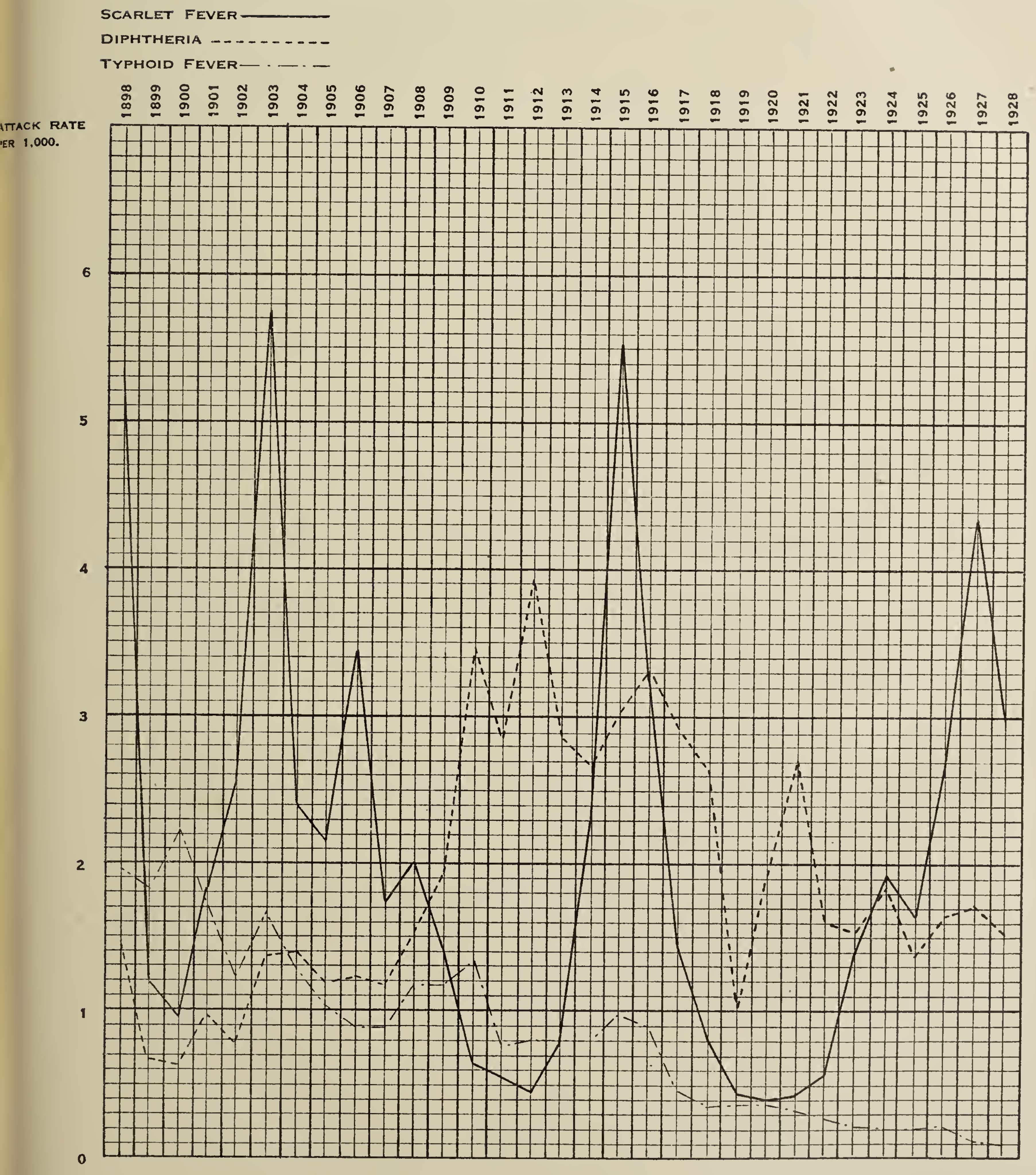
Epidemic Cerebro-spinal Fever.—In the metropolis there were 16 cases and 5 deaths.

Infantile Paralysis.—11 cases were recorded in the metropolis and 2 in the extra metropolitan district. Of the 13 cases notified, none proved fatal. By the courtesy of the Chief Civic Commissioner, Mr. John Garlick, a conference was held in the Town Hall, and a scheme formulated for the supervision of cases of infantile paralysis and for the co-operation of the Royal Prince Alfred Hospital, the Royal Alexandra Hospital for Children, and the North Shore Hospital in combating the spread of this disease and securing serum for the treatment of patients.

Mosquito Reduction.

Five conferences of representatives of local authorities and other interested parties took place during the year to consider the question of mosquito control in the metropolitan area. A good deal of propaganda on the subject has been carried out, and valuable data and special larval-eating fish were obtained during my visit to Brisbane, Java, and Malaya. The contemplated reclamation of the swamps and mud-flats on the Parramatta River, Cook's River, and the low-lying grounds at Rose Bay and in other areas should be one of the most effective measures for mitigating the nuisance from mosquitoes in the metropolitan area.

ATTACK RATE—METROPOLIS—PER 1,000 POPULATION.



Inspection of Restaurants, Tearooms, Butchers' Shops, Milk Vendors, Common Lodging-houses Barbers' Shops, &c., in the City.

In connection with the general administration of the City Health Officer's Department, it may be stated that there are 20,713 premises, 288 restaurants, 217 tearooms, 48 grill-rooms, 214 fruit shops, 98 fish shops, 100 butchers' shops, 481 barbers' shops, and 921 milk vendors in the city.

The following is a summary of the routine work during the year :—

1.	Number of complaints received and dealt with ...	800
2.	House-to-house inspection work, re-inspections, inspections *re* restaurants, garbage receptacles, streets, lanes, &c. ...	54,120
3.	Inspections of butcheries, meat depots, poulterers, &c. ...	9,192
4.	Inspections made under Pure Food Act Regulations ...	15,893
5.	Inspections of common lodging-houses ...	49
6.	Inspections under Dairies Supervision Act ...	4,167
7.	Investigations of smoke nuisance ...	147
8.	Inspections made by lady inspector ...	2,285
9.	Investigations of infectious diseases ...	269
10.	Notices served ...	4,923
11.	Number of premises referred to the City Building Surveyor ...	1,177
12.	Plans reported on ...	923
13.	Number of premises visited by rat-catching staff ...	11,917
14.	Number of complaints investigated by rat-catchers ...	366
15.	Number of traps set and poison baits laid ...	55,059
16.	Number of rats caught ...	4,098
17.	Number of milk vendors registered ...	1,436
18.	Number of milk samples taken for analyses ...	1,000
19.	Disinfection of premises ...	196
20.	Prosecutions against offenders ...	1,160
21.	Total amount of fines inflicted ...	£1,565 7s. 10d.

Legal Proceedings, Sydney Municipal Council.

The following is a record for the year 1928, with regard to legal proceedings undertaken by the Sydney Municipal Council :—

Sydney Corporation Act and By-laws ...	1,019
Public Health Act...	16
Pure Food Act ...	73
Police Offences Act ...	25
Electric Lighting Act ...	9
City of Sydney Improvement Act ...	6
Dairies Supervision Act ...	8

Two hundred and six (206) notices were served in the city proper under the Pure Food Act; 923 plans were inspected and reports made thereon by the City Health Officer's staff.

4,923 notices were served in the city under the Public Health Act, the Sydney Corporation Act, the Pure Food Act, the Dairies Supervision Act, and the Noxious Trades Act.

Of 1,000 samples of milk taken in the city, 1 was found not in conformity with the standard. There was one conviction for selling milk deficient in milk fat.

Septic Tank Installations.

No. of septic tanks inspected and approved by the Board of Health, 240;sites inspected as to suitability or installing septic tanks, 136.

2.—Hunter River Combined Sanitary District.

H. G. Wallace, M.B., B.S., D.P.H.

REPORT OF THE MEDICAL OFFICER OF HEALTH FOR YEAR, 1928.

I have the honor to submit the following report of the Public Health work done in this district during the year 1928.

Population.—The estimated mean population of the district in 1928 was 199,910, an increase of 2,570 compared with the population in 1927. The inhabitants are chiefly engaged in industrial, coal-mining, and pastoral occupations.

Administration.—The staff of the district headquarters at Newcastle consists of a Medical Officer of Health, one Senior Sanitary Inspector, one Nurse Inspector and one clerk. Each municipal and shire council in the district is a local health authority charged with the administration of the Public Health Acts, and employs one or more health inspectors. Of the twenty-three local government areas included in the district, eleven employ health inspectors holding the health inspector's certificate of the Royal Sanitary Institute, London, or of the Sydney Technical College. The rest are without this qualification.

In numerous cases, in addition to their duties as health inspectors, the inspectors carry out the duties of one or more other positions, such as town clerk, engineer, working foreman, &c. In consequence, some health activities, especially housing inspections and inspections under the Pure Food Act, are liable to be overshadowed by other duties, and the greater part of this work is usually carried out by officers of the Department of Public Health. Were each council required to appoint a full time certificated health inspector, there seems to be little doubt that a regular inspection of dwellings, and subsequent improvement of their defects would be possible and would do much to improve housing conditions in the district. A closer supervision also could be kept over the matters dealt with by the Pure Food Act. Not half the councils at present take samples of food and drugs regularly for analysis, and very few initiated any proceedings under the Public Health Acts or allied Acts during the year. These are matters which it is difficult to enforce on councils, and there should be no need to do so.

Vital Statistics.—Figures showing the population of each municipality and shire together with the chief causes of death at all ages and of infants under one year of age separately, are set out in tables appended to this report. It is to be noted that for the past two years all births have been allotted to the municipalities or shires where the mother resides, and all deaths to the usual place of residence of the deceased, so that comparisons with figures for previous years will not be quite accurate.

The total births in the district numbered 5,081 giving a crude birth rate of 25·4.

The deaths from all causes numbered 1,765 giving a death rate of 8·8.

Diseases of the heart were again the commonest cause of death, this being the cause to which 286 deaths were attributed. The next most common cause was cancer, with 166 deaths, followed in frequency by pneumonia, 126 deaths. Diarrhœa and enteritis came fourth with 108 deaths, of which 92 were at ages under five years.

Cancer has been the second most frequent cause of death in each of the past five years, the percentages of total deaths being :—

1924, 8·8 per cent. ; 1925, 8·6 per cent. ; 1926, 7·9 per cent. ; 1927, 8·0 per cent. ; 1928, 9·4 per cent

Infectious Diseases.—For table showing the distribution of notifiable infectious diseases, see p. 37.

Diphtheria.

441 cases of diphtheria were notified during the year, compared with 383 the annual average for the past five years. 407, or 92·3 per cent., were removed to hospital.

The disease was again widespread, only the smallest municipality, Raymond Terrace, remaining free. The disease was attended by a relatively low mortality, 10 deaths, equal to 2·26 per hundred cases, having occurred.

The incidence rate per thousand of population was 2·26. The death rate was 0·05 compared with 0·07 for the whole State.

Typhoid Fever.

There were 70 cases and 9 deaths. Of the 70 cases notified, 66, or 94·3 per cent were treated in hospital. The small number of cases treated at home is a satisfactory feature, as it must materially lessen the number of contact cases. It is regrettable, however, that all cases are not tested for the "carrier" state before being declared "cured."

Although the carrier condition is sometimes difficult to detect, there can be no doubt that a compulsory routine examination before discharge from hospital would detect a considerable proportion of the carriers, who are possibly the chief means of spreading the disease in the community. It is hoped that when the proposed Government Laboratory of Pathology is established in Newcastle that routine testing of patients will become universal.

Seventy cases were notified during the year compared with 73 the annual average for the previous five years. The fatality rate was 12·9 per cent. The death rate was 0·04 per thousand compared with 0·02 for the State.

Schick Test.—Following on the tragic happenings at Bundaberg, public feeling has been against any further application of the Schick test and toxin-antitoxin immunization in the district. This is most regrettable as, despite the unhappy occurrence at Bundaberg, we had a valuable and safe means of controlling the increasingly high incidence of the disease. It is to be hoped that other methods of proved efficacy will be developed in this country which will be without the stigma of dangerousness attaching henceforth to toxin-antitoxin. There seems to be some hope that such a method may be found in the French toxoid method, now largely being used in Europe and Canada.

SCARLET FEVER, 1928.

Two hundred and seventeen cases of scarlet fever were notified, compared with an average of 283 per annum during the previous five years. The type of the disease was mild, there being 5 deaths recorded as due to it.

The fatality rate was 2·3 per cent.

The incidence rate per thousand of population was 1·08.

There was one localised epidemic at Branxton which smouldered for several weeks. The cause could not be traced. There was no reason to suspect the milk supply in any case.

The death rate per thousand of population was 0·02 compared with 0·04 for the whole State.

Of the 217 cases notified only 62 or 29·6 per cent. were treated in hospital. One reason is to be found in the relatively mild type of the disease, which is not regarded with great seriousness by the public. Another reason is undoubtedly the shortage of accommodation for infectious cases in the hospitals throughout the district, the isolation accommodation in most cases being practically reserved for cases of diphtheria.

PULMONARY TUBERCULOSIS.

Sixty-two new cases of pulmonary tuberculosis were notified during the year, compared with 62 the average annually for the previous five years. The deaths numbered 66.

Age Groups.	Male.	Female.	Total.
All ages	29	33	62
Under 1 year	...	...	...
1– 4 years	...	...	...
5–14 ,,	...	...	...
15–24 ,,	4	7	11
25–34 ,,	7	7	14
35–44 ,,	4	7	11
45–54 ,,	3	8	11
55–64 ,,	3	3	6
65 and over	3	...	3
Age not stated	5	1	6
Total	29	33	62

The appointment of a Director of Tuberculosis will be welcomed as a means of co-ordinating the various anti-tuberculosis activities throughout the State, and of grading cases for treatment in suitable institutions. A very pressing need appears to be the provision of some pension, weekly allowance, or system of food orders for the dependents when the bread-winner of a family is removed to a sanatorium. There can be no doubt that many such persons struggle on at work for which they have long been unfit, rather than enter a sanatorium and leave their families in want. Moreover, the mental effect on such sanatorium patients who knew that their family would be provided for would probably have a beneficial influence and hasten recovery. Finally, and perhaps most important, conditions of poverty and consequent defective nutrition among contacts who have been exposed to infection and may be in the incipient stages of the disease, doubtless favour its development.

The Throat and Chest Dispensary has continued its good work during the year in the charge of Dr. Ethel Byrne. Nurse Inspector McKay has attended at each session to assist the Medical Officer, the business and administrative side being in the care of the Hon. J. L. Fegan, a member of the Board of Health.

The value of the dispensary is increased by the assistance given by the Newcastle and Northumberland Benevolent Society, of which Mr. Fegan is secretary. In this way the activities of the dispensary are very much extended.

The building is in a rather out-of-the way corner of Newcastle, and it would appear desirable to make the clinic an activity of the Newcastle Hospital as soon as accommodation can be made available in the proposed new out-patient department.

OTHER NOTIFIABLE INFECTIOUS DISEASE

Cerebro Spinal Meningitis.—One case of meningococcal meningitis (male, 7 years) was reported during the year. There were no deaths.

Encephalitis Lethargica.—Two cases were reported (female, 15 years; male, 49 years). There were no deaths.

Infantile Paralysis.—Two cases only were reported (male, 4 years; female, 11 months). No deaths occurred from this disease.

DENGUE FEVER, 1928.

During the year there were several small recrudescences of dengue fever in parts of the district, but there was nothing in the nature of an epidemic, and Newcastle suburbs remained practically untouched.

The dengue fever carrier *Aedes argenteus* was not nearly so prevalent during the year as in former years, and this may be attributed, in some measure at least, to the efforts made by a number of councils to carry out their obligations under the Local Government Ordinance dealing with mosquitoes.

PLAGUE.

One temporary rat catcher was employed by the Department at Newcastle during the year, who confined his work chiefly to obtaining specimens from the waterfront on the Newcastle side of the harbour, a number of these being examined for signs of plague together with specimens brought in to the Newcastle City Council's depôt.

One thousand six hundred and eighty-three rats were trapped by the department's catcher during the year, and in addition 687 were brought in to the depôt of the city council, which continues to pay a bonus of 6d. for each rat brought in.

The Navigation Department continued to lay poison baits along the wharves. 4,120 baits were laid in this way of which 1,845 were taken, presumably by rats.

Apart from these anti-plague activities extreme apathy was observed on the part of the various councils in dealing with rats or rat harbourages in their areas.

The new wharves being built along the water front by the Public Works Department are of rat-proof construction, and contrast favourably with the miles of rubble-backed wharf which still exist, forming an ideal shelter and breeding ground for rats on both sides of the harbour.

HOUSING.

The housing problem was less acute during 1928 than in some previous years. The standard of housing is gradually improving, and the worst of the older houses are gradually being eliminated, although much remains to be done, especially in some suburban areas.

Very little improvement has been noticed at Catherine Hill Bay where some of the worst housing conditions on the coalfields are to be found. It is regretted that it has not been considered feasible to resume an area of ground for subdivision in this vicinity, so that the miners would have an opportunity of acquiring small home sites in the vicinity of the coal mines where they work. At present they are in many cases practically compelled to live in the houses provided by the company which in many instances are much dilapidated.

As in previous years inspections of houses were carried out by the staff of this office at the request of councils whose health inspectors were not qualified to undertake the work, and resulted in most cases in condemned houses being renovated sufficiently to render them habitable, while in a few cases after-application of a closing order they remained closed or weredemo lished to make way for more hygienic structures.

INFANTILE MORTALITY.

Births in the district during 1928 numbered 5,081, and deaths of infants under one year of age 302, giving an infantile mortality rate of 59·4 compared with an average of 62·8 for the previous five years.

The work of the baby clinics has received much popular support. They are directly administered from Sydney and are not under the control of this office. Particulars of their activities appear elsewhere.

MATERNAL MORTALITY.

The number of deaths from causes connected with childbirth was 37, showing a death rate in childbirth of 7·2 per thousand births, compared with 5·4 the annual average for the previous five years.

It would appear desirable that publicity should be given for the necessity for ante-natal examinations. The baby clinics could be utilised to provide ante-natal clinics in charge of their honarary medical officer, and every subsidised public hospital should provide facilities for ante-natal work. By this means not only would ante-natal examinations become popularised but possibly a considerable number of avoidable deaths would be prevented.

PRIVATE HOSPITALS.

During the year inspections of the 50 licensed private hospitals in the district were made at intervals.

Of these 43 were for lying cases only. The total number of beds available in private hospitals in the district is now 378.

Inspections showed that these hospitals were being satisfactorily conducted. Registers are now on the whole very well kept.

There appears, however, to be some need for legislation to regulate the conduct of small lying-in homes. It is not unknown for the nurse in charge to leave a patient entirely alone in the house while she visits cases in the district. Moreover there should be some provision made to ensure that licensed premises are provided with suitable equipment in the way of instruments, sterilizers, bed linen, &c.

PURE FOOD ACT.

At intervals during the year visits were made to various parts of the district by an inspector from the Pure Food branch of head office staff. His visits were productive of a good deal of improvement among food handlers generally, but he could by no means carry out all the work that is necessary in this extensive and thickly populated district. As reported in previous years, there is a necessity for the appointment of a whole time pure food inspector who would work thoroughly throughout the district. The councils, on whom the obligation falls where they employ an inspector authorised for work, are as a whole notoriously apathetic in the matter. Inspector Godfrey, of this branch, carried out a number of inspections and taking of samples under the Act and also condemnation of foods found unfit for human consumption. Several prosecutions for breaches of the Act were successfully conducted by him.

NOXIOUS TRADES ACT.

Inspections were made by Inspector Godfrey of all premises prior to the issue of licenses under the Act. In addition inspections were made at irregular intervals by Inspector Godfrey and myself.

Premises on the whole were well looked after and kept in a satisfactory condition throughout the district.

MEAT INSPECTION.

Newcastle is fortunate in having some years ago adopted the principle of having all slaughtering done in an up-to-date abattoir under hygienic conditions, but other areas are slow to follow the example. For some years past the necessity for adequate meat inspection and for slaughtering under hygienic conditions has been brought before the councils of the Maitland and Cessnock districts, but action has been slow.

During the year Mr. J. B. Cramsie, chairman of the Metropolitan Meat Industry Board, was appointed to conduct an inquiry into the necessity for adequate meat inspection and the best method to adopt.

His report left no doubt of the urgent necessity of providing some adequate system of meat inspection, in the Maitland and Cessnock districts. As a temporary expedient he suggested the establishment of central killing houses in various areas, where several butchers would kill at one slaughter house where the meat could be thoroughly inspected prior to being sent out for human consumption. He also strongly urged the establishment of a central up to date abattoir for the district.

His recommendations, however, were not acted on, and it appears likely that some time may elapse before the matter is settled to the satisfaction of the Local Governing bodies concerned.

HOSPITAL ACCOMMODATION.

There is still no adequate provision for the isolation of cases of infectious disease in the district in time of epidemic. The infectious hospital site at Waratah was rounded off by the purchase of a small block of land which cut into one side of the reserve, but so far no commencement has been made with the work of erecting the necessary buildings, or even enclosing the area with a fence.

Several attempts have been made by the Waratah municipal council to have the reserved area thrown open for subdivision, but fortunately for the district, so far without success.

It would appear to be possible without the expenditure of a great deal of money, to enclose the area with a fence and erect wards for a certain number of beds, with accommodation for nurses, and to leave the question of kitchens, domestic quarters, &c., for the present by making use, with permission, of the Benevolent Society's Asylum adjacent. Though not quite a satisfactory plan, this would enable a commencement to be made with a minimum outlay of capital for the very urgent necessary work.

Newcastle is still without adequate provision for the treatment of venereal disease. Owing to the lack of space cases of venereal disease can receive only the most meagre treatment at the Newcastle Hospital, treatment which has been referred to in the annual report of the Medical Superintendent as "palliative rather than curative."

Plans of the proposed out patient department, which is to include a modern venereal diseases clinic have again been revised, but so far there has been no definite indication when the work will be commenced.

MISCELLANEOUS SERVICES.

During the year approximately 500 medical examinations were made comprising :—

(*a*) All first class pilots stationed at Newcastle.

(*b*) Candidates for employment in the Public Service, or public servants requiring medical examination on account of sickness or invalidity.

(*c*) Young persons without means seeking employment in factories for the first time.

(*d*) Applicants for admission to hospitals or asylums.

(*e*) Casual and permanent employees of the Hunter District Water Supply and Sewerage Board.

(*f*) A large number of claimants for compensation under the Worker's Compensation Act, 1926.

Under instructions from head office visits were made outside the district to Manilla *re* establishment of sale yards; to Merriwa *re* Public Hospital construction; to Bulli and Woonoona *re* slaughtering premises; to Lismore *re* prevention of water pollution; to Quirindi *re* typhoid outbreak and to Somerton on special investigation.

BACTERIOLOGICAL LABORATORY.

A number of sputa were examined for medical practitioners in the district, and numerous swabbings from cases of diphtheria, but the total number of specimens examined was comparatively small owing to the limited time available for such work.

Vital statistics tables are appended.

Yours faithfully,
H. G. WALLACE,
Medical Officer of Health.

3.—Broken Hill, 1928.

Report of Medical Officer-in-Charge—W. E. George, M.B., Ch.M.

In March, 1928, the Department of Public Health took over from the hospital authorities the control of the Laboratory attached to the Broken Hill and District Hospital. Up to this time the upkeep of the Laboratory, including the salary of the staff, had been a charge on the hospital. A scheme was at the same time organised by which practically all the Government medical work of the city and district is to be carried out by whole time Government medical officers.

By arrangement with the State Department of Labour and Industry and the Council of the Broken Hill Mine Managers' Association, Dr. W. E. George, officer-in-charge of the Bureau of Medical Inspection, was, in September, 1928, appointed Officer-in-charge of Broken Hill District. His additional duties include those of Government medical officer at Broken Hill, and the supervision of the State Laboratory. An assistant medical officer, R. W. Thompson, was appointed to assist in the laboratory work to carry out the periodic medical re-examination of school children in the district in collaboration with the State Department of Education, as well as to attend to public health duties in the district under the direction of the Officer-in-charge.

The departmental medical officers are available to advise the local authorities in regard to public health matters.

Although by far the greater part of the work done in the Laboratory is undertaken on behalf of the Broken Hill and District Hospital, an appreciable number of examinations is conducted at the request of private medical practitioners, and of the local municipal health authorities, while it is interesting to note that work has been done for patients as far distant as Wilcannia and Tilpa.

During the nine months (March December, 1928) 2,888 examinations were carried out at the Laboratory.

Biochemical investigations formed about 7 per cent. of the laboratory examinations. The specialised nature of biochemical investigation coupled with the rapid advance in the methods of technique make it practically impossible for the present small staff to do adequate justice to such an important branch of pathological investigation. It would appear that the time is fast approaching when consideration should be given to the question of separating the biochemical from the other laboratory work. Were this done, many further lines of investigation, bacteriological as well as biochemical, could be pursued. Moreover such an arrangement would permit of original investigations being undertaken, either by members of the laboratory staff alone, or in collaboration with the officers of the hospital.

The hearty co-operation given by the Surgeon Superintendent and the various staffs of the Broken Hill and District Hospital is much appreciated.

In addition to the above the Officer-in-charge with the aid of his assistants carries out general public health duties. These may be summarised as follows :—

1. He concerns himself with all matters affecting public health dealt with in the Public Health Acts of New South Wales and Regulations thereunder, and Local Government Act and Ordinances, *e.g.*, housing, investigation and control of infectious disease, tuberculosis, water supplies and contamination, rivers and streams, drainage, closets, garbage, etc..

    Noxious Trades.

    Genereal Diseases Act and Regulation when requested.

    Supervision and inspection of private hospitals.

    Matters affecting public hospitals when requested.

    Matters affecting Nurses' Registration Act and Regulations when requested.

    Matters involved in Pure Food Act and Regulations when requested.

    Matter involved in Dairies Supervision Act.

2. He performs all duties imposed on a medical officer of health by statute and regulations and by any orders or directions from time to time given by the Director General of Public Health.

3. He is of assistance to any Anti-Tuberculosis Dispensary, Sanatoria, Baby Clinic or any Maternity or Child Welfare Agency.

4. He renders assistance in connection with Cattle Slaughtering and Diseased Animals and Meat Act Abattoirs, &c.

5. He assists in carrying out the provisions of the Liquor Act with regard to sanitation of hotels, when requested

W. E. GEORGE,
Medical Officer-in-Charge,
Broken Hill District.

1928.

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SECTION III.

REPORT upon the State Hospitals under the Control of the Director-General of Public Health.

1.—THE COAST HOSPITAL, SYDNEY: REPORT FOR THE YEAR 1928.

The Medical Superintendent to The Director-General of Public Health.

Sir,

I have the honor to submit the following Report on the working of the Coast Hospital during the year 1928.

The Staff during the year has been as follows:—

Honorary Medical Staff.

Honorary Physicians.—Alfred Walter Campbell, M.B., M.S. (Edin.), M.D.; James McDonald Gill, M.D. (Lond.), L.R.C.P. (Lond.), M.R.C.S. (Eng.); Hazlett Hamilton Marshall, L.R.C.P.S. (Edin.), L.F.P.S. (Glas.), M.B., M.S. (Edin.); Alan Worsley Holmes àCourt, M.D. (Syd.), M.R.C.P. (Lond.), Medaille d'Epidemics; Richard Jeremy, M.B., Ch.M. (Syd.), M.R.C.P. (Lond.).

Honorary Surgeons—Sir Charles Clubbe, L.R.C.P. (Lond.), M.R.C.S. (Eng.); George Henry Abbott, M.B., Ch.M. (Syd.); Sir Alexander MacCormick, M.B., M.S., M.D. (Edin.), M.H.F.R.C.S. (Eng.), H.F.R.C.S. (Edin); John Colvin Storey, M.B., Ch.M. (Syd.), F.R.C.S. (Eng.); Edward Thomas Thring, F.R.C.S. (Eng.), L.R.C.P. (Lond.); Harry Cecil Rutherford Darling, M.D. (Lond.), F.R.C.S. (Eng.); Earle Christian Grafton Page, M.B. (Syd.); Thomas Maynard Furber, M.B. (Syd.); James Harold Willmott Leadley, M.B., M.S. (Syd.).

Honorary Gynæcologists.—Joseph Foreman, L.S.A. (Lond.), L.M.R.C.P. (Edin.), M.R.C.S. (Eng.); Ralph Worrall, M.D., M.S. (Ire.).

Honorary Ophthalmic Surgeons.—Charles Gordon McLeod, M.B., M.S. (Edin.); Albert Tange Dunlop, M.B., M.S. (Syd.).

Honorary Ear, Nose, and Throat.—Herbert Huff Johnston, M.B. (Syd.).

Honorary Dermatologists.—Wahab McMurray, M.D., M.S. (Ire.); Ewan Murray Will, M.B., Ch.M (Syd).

Honorary Urologist.—Robert Joseph Silverton, M.B., M.S. (Syd.).

Honorary Radiographer.—Malcolm Frizell, M.B. (Syd.).—Resigned 3rd August, 1928.

Honorary Orthopædic Surgeon.—Wilfred Vickers, M.B. (Syd.).

Resident Medical Staff.

Medical Superintendent.—Reginald Jeffery Millard, M.B., Ch.M. (Syd.), D.P.H. (Camb.), C.M.G., C.B.E.

Deputy Medical Superintendent.—Robert Maxwell McMaster, M.B., M.S. (Syd.), D.S.O.

Senior Assistant Medical Officers.—Cecil Julian Manning Walters, M.B., Ch.M. (Syd.); Robert James Wherry Malcolm, M.B., M.S. (Syd.); Albert Edward Roy Hoskins, M.B., Ch.M. (Syd.).

Junior Medical Officers.—8.
Manager.—Mr. R. Goldrick.
Matron, Miss C. M. Burne.
Sub-Matron, Miss C. M. Dickson, R.R.C.

Dispenser, Miss E. M. Kirton.
Clerk and Storekeeper, Mr. W. Dwyer.
Sisters, 15; Nurses, 213; other Female Staff, 61.
Attendants (Ward), 27; other Male Staff, 56.

STATISTICS.

Detailed tables of statistics will be found in the Appendix, but I may summarise here the more important of these.

I.—The following table is a comparative general statement for 1928 and the previous year :—

	1927.	1928.
Remaining in Hospital on 31st December	643	727
Admitted during the year	10,163	10,102
Total cases under treatment during the year	10,820	10,745
Discharges, including deaths	10,173	10,018
Deaths	574	654
Death-rate per cent. of total discharges	5·6	6·5
Average daily number of occupied beds	709·96	737·4
Average stay of patients (in days)	27·8	24·5

For the year the number of admissions was 61 less than in 1927, and the average daily number of occupied beds was 737·4 as against 709·96 in 1927. The average stay of patients was 24·5 days.

II. *Infectious Diseases.*—The following table summarises the work of the year in regard to these, and affords a comparison with 1927. In this table the "cases" are cases treated until discharge or death, and the fatality is reckoned on the total cases treated. Cases remaining in hospital on 31st December, 1928, are not included in these figures for the year :—

	1927.			1928.		
	Cases.	Deaths.	Fatality.	Cases.	Deaths.	Fatality.
Typhoid Fever	59	4	6·8	24	2	8·4
Measles	91	1	1·1	525	62	11·8
Scarlet Fever	2,403	53	2·2	1,723	44	2·55
Whooping-cough	43	5	11·6	11	...	...
Diphtheria	1,062	15	1·4	1,141	18	1·6
Influenza	145	1	0·69	154	4	2·5
Erysipelas	119	10	8·4	130	5	3·84
Other Epidemic Diseases	62	2	3·2	23	...	...

Typhoid Fever.—The number of cases under treatment was less than in 1927; the fatality was higher.

Scarlet Fever.—Was less prevalent than in 1927—5,452 cases being notified in the whole metropolitan area during 1928 as against 8,243 during 1927, and the cases treated at the Coast Hospital showed a corresponding decrease. There were 44 deaths.

Diphtheria.—In the Metropolis the cases notified amounted to 3,151 in 1928 as against 2,112 in 1927; and the cases treated at the Coast Hospital were 1,149 as against 1,062 in 1927. The percentage of notified cases which came to this hospital for treatment was—in 1927, 50·3 per cent.; and in 1928, 38·8 per cent. Of the 18 fatal cases, 8 died within seven days of admission. Intubation was performed on 35 patients and tracheotomy on 3.

Antitoxin was administered in the hospital to 1,188 cases in the doses shown in the following table :—

Antitoxin.	Cases.	Percentage of Total Cases.	Antitoxin.	Cases.	Percentage of Total Cases.
2,000 units	14	1·18	36,000 units	...	...
4,000 ,,	134	11·28	38,000 ,,	...	...
6,000 ,,	113	9·51	40,000 ,,	3	0·25
8,000 ,,	234	11·38	42,000 ,,	...	...
10,000 ,,	326	27·44	44,000 ,,	...	...
12,000 ,,	105	8·83	46,000 ,,	...	...
14,000 ,,	52	4·38	48,000 ,,	...	...
16,000 ,,	61	5·13	50,000 ,,	...	...
18,000 ,,	7	0·59	52,000 ,,	...	...
20,000 ,,	118	9·93	60,000 ,,	...	...
22,000 ,,	2	0·17	70,000 ,,	...	...
24,000 ,,	3	0·25	74,000 ,,	...	...
26,000 ,,	...	...	80,000 ,,	...	...
28,000 ,,	1	0·08	90,000 ,,	...	...
30,000 ,,	15	1·26	100,000 ,,	...	...
32,000 ,,	...	...	120,000 ,,	...	...
34,000 ,,	...	...			

Altogether 3,584 cases of typhoid fever, measles, scarlet fever, diphtheria, influenza, meningitis, and whooping cough were treated. In the Appendix will be found some further details of these cases, viz. :—

Table III.—Age and sex distribution of cases discharged or died during the year.

Table IV.—Number of cases of diphtheria, scarlet fever, and typhoid notified within the Metropolis, and the percentage of these cases treated at the Coast Hospital in each of the years 1915–1928, inclusive.

Table V.—Duration of stay in hospital of cases of typhoid fever, measles, scarlet fever, whooping cough, and diphtheria.

Table VI.—Fortnightly admissions of all patients during 1928.

Table VII.—Classification of diseases treated during 1928.

Table VIII.—Operations performed during 1928.

Table XI.—Summary table showing the work of the Coast Hospital and its cost each year from 1881 to 1928.

Abortion.—During the year 572 patients were treated for abortion. The admissions for this condition have increased of late years at a startling rate, as indicated by the following figures, which show the ratio of abortion cases to all cases treated in successive years 1919–1928 inclusive :—

Year.	Total females treated.	Abortions.	Percentage.	Year.	Total females treated.	Abortions.	Percentage.
1919	2,515	54	2·14	1924	4,325	436	10·0
1920	2,645	193	7·25	1925	4,602	497	10·8
1921	3,210	237	7·38	1926	5,550	620	11·1
1922	3,426	354	10·3	1927	5,759	581	10·0
1923	4,289	381	8·8	1928	5,302	572	10·7

3. *Expenditure.*—Table IX gives a detailed statement of the working expenses for 1927 and 1928 from which it will be seen that the total expenditure increased from £107,564 18s. 11d. in 1927, to £113,562 1s. 9d. in 1928, and the average cost per occupied bed increased from £151 10s. 1d. to £154 0s. 0d.

Instruction by lectures and demonstrations was, as usual, given to the Nurses by the Medical Staff and Matron; and in invalid cookery by a specially engaged teacher (Miss Shepherd), as in former years. Examinations were held in accordance with regulations, and nurses passed as follows :—

First-year examination	57
Second-year ,, ...	48
Third-year ,, ...	42
Fourth-year ,, ...	34

During the year 29 certificated nurses left the hospital to take up private nursing, and to take positions in other hospitals. In addition to these, 6 Coast Hospital nurses passed the A.T.N.A. Obstetric Examination, after having the necessary training at Montrose Hospital, whilst 45 nurses passed the Nurses Registration Board Examination.

Sick leave was granted to 149 nurses, amounting in the aggregate to 3,061 days. Of these nurses some were ill on more than one occasion, there being 222 cases of illness altogether. Of the sick nurses 5 had diphtheria, 145 days; 16 had scarlet fever, 851 days. All the nurses recovered satisfactorily.

5. *Laboratory.*—The following Table summarises the work done in the hospital laboratory month by month. In all, 14,770 cultures were examined for diphtheria. The practice was continued of accepting no diphtheria culture as negative unless found so after forty-eight hours' incubation.

1928.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Cultures examined for diphtheria—													
1. After 12–24 hours' incubation	808	748	1,110	1,493	1,683	1,440	1,471	1,142	1,303	1,335	1,087	1,150	14,770
2. Negative after 12–24 hours' incubation, and re-examined after 48 hours ...	700	658	881	1,216	1,425	1,191	1,225	917	1,000	1,024	848	914	11,999
3. Positive for diphtheria at second examination	18	34	44	59	48	49	34	36	51	37	28	31	469
4. Percentage of positives in second examination	2·6	5·2	5·0	4·9	3·4	4·1	2·8	3·9	5·1	3·6	3·3	3·4	3·9
Blood—Full counts	20	23	34	26	22	18	15	18	15	34	16	13	254
Leucocyte counts ...	43	40	25	23	37	34	28	35	29	27	38	28	387
Parasites, &c.	...	1	3	1	...	...	1	1	1	1	1	7	17
Cultures	3	4	3	2	15	5	5	4	3	3	7	4	58
Widals	26	24	3	10	17	8	7	7	8	10	14	7	141
Fluids—Cerebro-spinal	6	1	4	...	8	4	...	9	12	7	2	10	63
Body fluids	3	4	12	2	7	13	7	6	7	9	15	12	97
Fæces	15	7	7	1	1	3	4	...	8	5	4	6	61
Pus—For organisms, &c. ...	32	19	7	18	19	11	17	15	19	44	33	26	260
Smears—Gonococci	64	49	71	67	57	97	146	100	104	115	115	130	1,115
Leprosy	2	3	1	2	1	...	...	1	...	...	...	3	13
Diphtheria and Vincent's Angina ...	1	...	3	...	6	7	9	4	5	11	14	9	69
Sp. pallidum	7	8	3	8	5	4	7	6	13	5	8	8	82
Hairs and Scales for fungi ...	1	1	3	1	3	2	3	6	...	2	4	1	27
Sputum for T.B.	100	121	104	94	139	235	214	172	146	129	134	90	1,678
Urines—Bacteriological	12	4	8	...	1	4	2	6	1	4	4	2	48
Bacteriological and pus, &c.	61	28	40	48	75	51	37	29	27	17	27	24	464
Deposits only	10	11	17	12	11	24	15	20	28	30	16	17	211
Chemical	21	9	12	13	22	38	16	7	17	16	20	9	200
Vaccines prepared	6	1	2	7	8	...	...	2	4	3	2	2	37
Blood—Sugar	112	72	73	59	94	81	78	107	62	61	75	64	938
Typing for transfusion	10	10	19	7	7	...	11	1	25	2	12	...	104
Totals	2,063	1,846	2,445	3,110	3,663	3,270	3,318	2,615	2,837	2,894	2,506	2,536	33,093

Auxiliary Branch at Randwick.—During the year two more wards were reconditioned and equipped. One of these was taken into use early in 1928. The other remains unused pending the provision of accommodation for more nurses.

Of the three wards in use, two are occupied by tuberculus patients and the other by convalescents from the Coast Hospital. All patients are males.

The opening of these wards for tuberculosis patients allowed of the transfer of patients from Lidcombe Hospital and from Waterfall Hospital. The patients transferred were mostly in an advanced stage of the disease. Randwick being more accessible than either Lidcombe or Waterfall the transfer has been generally appreciated by the relatives and friends of the patients.

Four more wards will be equipped and occupied during 1929, making the total accommodation at this branch 240 beds. The stone building, known as the Catherine Hayes Hospital, is being altered and adapted to house about forty nurses.

The principal works carried out during 1928 by the Hospital Staff were as follows :—

(1) *Improvements, &c.*—Wards III, IV, V and VI—Constructed cement steps and paths. Wards IV, V, VIII and IX—Improved ventilation of bathrooms. Ward X—Enclosed two bays of verandah with sliding sashes and partition. Ward XIV—Converted sterilizing room into operation room. General Office—Converted portion of store into record room, &c. General Store—Reconstructed shelving, &c. Entrance Gates—Removed stone pier. Male Lazaret—Put down new concrete floor in bathroom. Female Lazaret—Made bookcase for day room. Medical Superintendent's Quarters—Provided new gates, posts, &c. Matron's Quarters—Erected park rail fence. "Military" Nurses' Quarters—Installed new boiler. Infectious Division Kitchen—Installed new milk vat. The Avenue—Removed electric light pole and improved road. General Division—Lagged hot-water services.

I have, &c.,

R. J. MILLARD,
Medical Superintendent.

R. GOLDRICK, Manager.

TABLE I.—General Statement of the working of the Hospital from 1st January to 31st December, 1928.

	Males.	Females.	Total.
Number of beds available in the General Division on 31st December, 1928...	274	271	545
" " Infectious Division	......	......	211
" " Nurses' Sick Room	......	4	4
Coast Hospital Auxiliary, Randwick	90	......	90
Total accommodation	......	......	850
Number of inmates remaining in hospital on 31st December, 1927...	320	323	643
" admitted during the year 1928	4,800	5,302	10,102
Total treated	5,120	5,625	10,745
Discharged—Cured	2,794	4,154	6,948
" Relieved	1,439	736	2,175
" Unrelieved	122	97	219
" No Disease	9	13	22
Died	387	267	654
Total number discharged, or who died	4,751	5,267	10,018
Remaining in hospital on 31st December, 1928	369	358	727

Average daily number resident	737·4
Average residence of discharged patients in days	24·5
Rate of mortality on total number who were discharged or who died	6·5
Total cost of maintenance and treatment of indoor patients	£113,562 1s. 9d.
Average cost of patients per annum	£154 0s. 0d.

	Males.	Females.	Total.	Total Visits.
Out-patients—				
Total number of individuals who received treatment...	1,808	2,587	4,395	11,226
Venereal Disease	....	....	....	6,832
Total cost of Out-patient treatment	....	....	....	£992 3s. 3d.

Hospital Staff on 31st December, 1928.

Medical and Administrative.	Number.	Nursing.	Number.	General.	Number.
Medical Superintendent	1	Sub-Matron	1	Foreman	1
Deputy Medical Superintendent	1	Asst. Sub-Matron	1	Artisans	12
Assistant Medical Officers	11	Sisters—		Attendants, Outdoor	10
Manager	1	Senior	9	,,	15
Matron	1	Junior	6	Telephone Attendants	4
Dispensers	3	Nurses—		Male Cooks	4
Clerks	9	Staff	24	Female Cooks	8
Laboratory Assistants	2	Pupil	189	,, Servants	34
X-Ray Assistant	1	Ward Attendants	27	Laundresses	12
Total	30	Housekeeper	1	Needlewomen	3
			258		103
				Total Staff	396

TABLE II.—Return showing the number of Wards, together with the cubic space and number of beds in each Ward, in the General and Infectious Divisions of the Coast Hospital for the year 1928.

Ward.	Cubic Space.	No. of Beds.	Cubic space per Bed in Ward.	Ward.	Cubic Space.	No. of Beds.	Cubic Space per Bed in Ward.
1	77,788	91	855	16	11,520	13	886
3	12,000	10	1,200	17	16,915	30	564
4	12,900	11	1,173	18 and verandah	53,062	50	1,263
5 and gallery	31,368	25	1,254	19 and verandah	53,062	50	1,263
6	10,800	8	1,350	20 and verandah	53,062	50	1,263
7	10,800	8	1,350	21 and verandah	53,062	50	1,263
8 and gallery	32,268	24	1,344	23 and verandah	53,062	50	1,263
9	12,000	8	1,500	24	19,023	25	761
10 and N Sick Room	16,356	14	1,168	25	19,023	25	761
11	22,320	26	858	26	19,023	25	761
12	23,880	28	853	27	19,023	25	761
13	28,236	41	688				
14	43,520	43	1,012	Total	686,681	717	
15	28,296	30	943				

Coast Hospital Auxiliary, Randwick.

Ward.	Cubic Space.	No. of Beds.	Cubic space per Bed.
24	23,415	24	975
26	23,415	24	975
28	23,415	24	975

These figures do not include 6 beds on the verandah of each ward.

TABLE III.—Discharges and Deaths during 1928, distributed under sex and age.

Age.	0–5		6–10		11–15		16–20		21–30		31–40		41–50		51–60		61–70		71–80		81–90		Total sexes.		Total cases treated.	Total deaths.	Mortality per cent.
Sex.	M	F.	M	F.	M.	F.	M	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	Male.	Female.			
1. *Infectious Diseases*—																											
Typhoid Fever—																											
Discharges	...	...	1	1	1	...	4	1	3	3	4	1	1	...	...	...	...	...	...	...	...	...	14	8	24	2	16·6
Deaths	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	2			
Measles—																											
Discharges	118	115	31	29	10	7	10	14	19	38	3	5	...	2	...	...	...	...	...	...	...	...	218	245	525	62	11·8
Deaths	24	31	3	2	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	27	35			
Scarlet Fever—																											
Discharges	198	236	146	301	71	193	33	115	73	197	17	63	7	23	1	3	...	1	...	...	...	1	546	1,133	1,723	44	2·5
Deaths	8	17	4	7	...	1	1	...	1	2	1	...	1	...	1	...	...	...	...	...	...	...	17	27			
Whooping Cough—																											
Discharges	5	4	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	6	11	...	...
Deaths	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...			
Diphtheria—																											
Discharges	295	311	143	173	14	50	10	22	15	38	2	19	3	6	1	3	...	...	...	...	...	...	492	631	1,141	18	1·6
Deaths	7	5	1	3	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	10	8			
Influenza—																											
Discharges	1	1	5	1	10	9	8	6	17	34	7	19	9	6	6	3	5	1	1	1	...	...	69	81	154	4	2·6
Deaths	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	4			
Plague—																											
Discharges	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Deaths	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...			
Cerebro-spinal Meningitis—																											
Discharges	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	3	2	66·7
Deaths	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	1	1			
2. *Other Diseases*—																											
Discharges	105	109	88	57	141	120	311	363	864	935	694	604	388	348	268	212	168	116	66	35	4	1	3,094	2,821	9,437	522	8·1
Deaths	9	9	5	2	4	3	13	7	32	34	42	26	52	36	74	38	63	33	17	16	5	2	332	190			
Totals	770	838	427	578	253	385	390	530	1,024	1,282	770	737	462	422	352	262	236	151	84	52	9	4	4,777	5,241	10,018	654	...

TABLE IV.—Showing Number of Cases of Diphtheria, Scarlet Fever, and Typhoid Fever notified within the Metropolis, and the percentage of these cases treated at the Coast Hospital, in each of the years 1915–1928 inclusive.

	1915.	1916.	1917.	1918.	1919.	1920.	1921.	1922.	1923.	1924.	1925.	1926.	1927.	1928.
Diphtheria.														
Cases notified in Metropolis...	2,551	2,829	2,576	2,399	988	1,825	2,916	1,807	1,722	2,115	1,626	2,048	2,112	2,028
Cases treated at Coast Hospital.	940	1,149	1,259	1,241	501	834	1,360	905	854	1,115	787	1,018	997	1,123
Percentage.........	36·85	40·6	48·8	51·7	50·72	45·6	46·6	50	49·5	52·7	48·4	49·7	47·2	53·8
Scarlet Fever.														
Cases notified in Metropolis...	4,726	2,715	1,217	765	424	468	511	653	1,541	2,241	1,916	3,424	5,840	3,729
Cases treated at Coast Hospital.	1,224	968	564	333	174	167	174	229	622	1,045	842	1,668	2,183	1,723
Percentage.........	25·9	35·7	46·3	43·5	41·04	35·6	34	35	40·4	46·6	43·9	48·7	37·4	46·2
Typhoid Fever.														
Cases notified in Metropolis	821	654	403	327	335	366	342	246	265	242	230	245	184	133
Cases treated at Coast Hospital.	104	79	21	41	20	56	49	33	51	58	50	60	33	22
Percentage.........	12·67	12	5·2	12·5	5·97	15·3	14·3	13·4	19·2	23·9	21·7	24·4	18	16·6

TABLE V.—Duration of Stay in Hospital of cases of Typhoid Fever, Measles, Scarlet Fever, Whooping Cough, and Diphtheria.

Duration of Stay	Typhoid Fever.			Measles.			Scarlet Fever.			Whooping Cough.			Diphtheria.		
	Cured.	Died.	Total.	Cured.	Died.	Total.	Cured.	Died.	Total.	Cured.	Died.	Total.	Cured.	Died.	Total.
1 week or less	...	1	1	47	29	76	13	21	34	1	...	1	25	12	37
1— 2 weeks..	...	...	...	188	15	203	20	6	26	2	...	2	165	1	166
2— 3 „ ...	1	...	1	79	9	88	60	11	71	1	...	1	539	2	541
3— 4 „ ...	1	...	1	37	2	39	537	4	541	4	...	4	192	1	193
4— 5 „ ...	2	...	2	16	4	20	697	1	698	...	...	...	75	...	75
5— 6 „ ...	8	...	8	11	...	11	128	...	128	1	...	1	36	...	36
6— 7 „ ...	5	1	6	13	1	14	69	...	69	...	...	...	25	1	26
7— 8 „ ...	3	...	3	4	2	6	54	1	55	...	...	...	11	...	11
8— 9 „ ...	...	...	...	1	...	1	20	...	20	...	...	...	13	1	14
9—10 „ ...	...	...	...	2	...	2	23	...	23	...	...	...	5	...	5
10—11 „ ...	...	...	...	2	...	2	12	...	12	...	...	...	4	...	4
11—12 „ ...	...	...	...	1	...	1	10	...	10	...	...	...	4	...	4
12—13 „ ...	...	...	...	...	...	...	9	...	9	1	...	1	4	...	4
13—14 „ ...	...	...	...	...	...	...	9	...	9	...	...	...	2	...	2
14—15 „ ...	...	...	...	...	...	...	4	...	4	...	...	...	1	...	1
15—16 „ ...	...	...	...	...	...	...	5	...	5	...	...	...	1	...	1
16—17 „ ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17—18 „ ...	...	...	...	...	...	...	2	...	2	...	...	...	1	...	1
18—19 „ ...	...	...	...	...	...	...	2	...	2	...	...	...	...	...	...
19—20 „ ...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...
20—21 „ ...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1
21—22 „ ...	...	...	...	...	...	...	2	...	2	...	...	...	1	...	1
22—23 „ ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23—24 „ ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24—25 „ ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25—26 „ ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26—27 „ ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27—28 „ ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28—29 „ ...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...
29—30 „ ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30—31 „ ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31—32 „ ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32—33 „ ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Over 33 „ ...	...	...	...	...	...	...	2	...	2	...	...	...	...	...	...
Total ...	20	2	22	401	62	463	1,679	44	1,723	11	...	11	1,105	18	1,123

TABLE VI.—Fortnightly Admission of cases during 1928.

	Fortnight ending—																										Total.
	Jan.		Feb.		March.		April.		May.		June.			July.		Aug.		Sept.		Oct.		Nov.		Dec.			
	14	28	11	25	10	24	7	21	5	19	2	16	30	14	28	11	25	8	22	6	20	3	17	1	15	31	
Typhoid Fever	4	2	...	1	...	...	...	...	...	3	1	...	2	...	...	...	...	...	...	...	...	...	1	...	1	...	15
Measles	5	2	...	1	...	4	1	2	3	4	3	2	4	7	3	13	12	29	45	50	57	61	58	32	55	57	510
Scarlet Fever	76	54	59	38	49	45	47	52	71	63	68	71	69	78	88	86	58	70	79	62	80	56	70	73	59	93	1,714
Whooping Cough	...	1	..	...	...	1	...	...	...	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5
Diphtheria	18	36	24	29	49	64	60	69	82	75	79	79	67	45	48	45	49	25	26	32	27	19	22	26	26	28	1,149
Influenza	5	9	6	4	...	4	4	2	5	5	10	2	5	1	10	2	7	6	5	6	4	8	15	10	8	7	150
Other Diseases	262	282	272	257	272	230	247	238	219	262	237	244	243	256	215	261	233	265	277	271	254	209	256	256	255	286	6,559
Total.........	370	386	361	330	370	348	359	363	380	413	399	399	390	387	364	407	359	395	432	421	422	353	422	397	404	471	10,102

TABLE VII.—Return of the Number of Persons under Treatment, the Order of Disease for which they were treated, and the Number of Deaths in each Order during the year 1928. (Includes cases remaining in Hospital on 31st December, 1927.)

	Discharged during the year.				Remaining in on 31st December, 1928.	Total.	Average number of days in Hospital.
	Cured.	Relieved.	Un-relieved.	Died.			
CLASS 1.—GENERAL DISEASES.							
Typhoid Fever	20	...	...	2	...	22	39·1
Malaria	1	2	...	...	...	3	13·0
Measles	399	2	...	62	50	463	16·0
Scarlet Fever	1,662	16	1	44	159	1,723	33·2
Whooping-cough	10	1	...	...	...	11	42·5
Diphtheria	1,093	11	1	18	67	1,123	22·3
Influenza	143	7	...	4	6	154	29·8
Mumps	115	6	...	...	...	121	11·8
Dysentery	...	...	...	1	...	1	89·0
Erysipelas	124	1	...	5	...	130	19·6
Other Epidemic Diseases	19	3	1	...	3	23	5·0
Purulent Infection and Septicæmia	...	...	...	2	...	2	3·5
Anthrax	...	...	...	...	...	...	...
Tetanus	1	...	...	2	...	3	16·6
Rickets	...	...	...	...	...	...	...
Lethargica	1	1	...	...	...	2	46·5
Tuberculosis of the Lungs	19	56	7	104	60	186	49·1
,, Acute Miliary	...	...	...	...	...	...	...
,, Meningitis	...	...	...	3	7	3	32·0
,, Pott's Disease	...	1	...	...	...	1	27·0
,, Hips	...	5	...	1	3	6	289·0
,, Other	3	13	3	6	3	25	94·3
Poliomyelitis	...	...	...	...	1	...	...
Syphilis—Primary	...	54	5	...	1	59	20·6
,, Secondary	...	28	2	...	4	30	29·8
,, Tertiary	...	35	...	1	4	36	36·0
,, Cerebral and other Diseases	1	29	2	8	2	40	36·3
,, II 2, III 9	...	...	...	...	...	...	...
Soft Chancre	11	4	...	...	...	15	4·4
Gonorrhœal Disease	16	660	10	...	66	686	27·3
Cancer, &c., of the Mouth	7	7	3	1	1	18	29·9
,, of the Stomach and Liver	3	2	11	14	...	30	2·7
,, of the Peritonæum, Intestines, and Rectum	1	14	6	8	...	29	78·2
,, of the Female Genital Organs	2	11	10	5	...	28	29·5
,, of the Breast	7	...	...	2	...	9	28·5
,, of the Skin	4	6	2	1	...	13	32·8
,, of other Organs	3	5	8	12	2	28	32·8
Tumours	2	...	2	...	...	4	19·7
Acute Rheumatism	63	10	...	2	9	75	47·0
Chronic Rheumatism and Gout	4	30	2	...	...	35	40·2
Diabetes	...	81	...	16	8	97	40·5
Exophthalmic Goitre	4	4	1	...	...	9	68·1
Hodgkin's Disease	...	...	...	...	...	...	...
Anæmia, Chlorosis	3	7	1	4	2	16	76·6
Leprosy	1	...	...	...	...	1	50·0
Alcoholism, Acute and Chronic	6	6	1	...	...	13	26·0
Other Chronic Poisoning and Lead	3	2	1	...	1	6	7·5
Other General Diseases	1	3	2	1	...	7	24·2
Diseases of Spleen	1	1	...	...	1	2	22·5
Addison's Disease	...	...	...	...	...	...	...
Diseases of Pituitary Glands	4	4	...	1	1	9	40·2
Total, Class 1	3,757	1,128	82	330	461	5,297	...
CLASS 2.—DISEASES OF THE NERVOUS SYSTEM AND OF THE ORGANS OF SPECIAL SENSE.							
Meningitis	...	...	...	3	2	3	36·0
Cerebro-spinal Meningitis	1	...	...	2	...	3	31·0
Other Diseases of the Spinal Cord	...	3	3	...	3	6	76·5
Cerebral Hæmorrhage	1	14	2	20	4	37	28·9
General Paralysis of Insane	...	...	1	...	...	1	24·0
Other forms of Mental Alienation	1	1	7	...	...	9	12·0
Epilepsy	1	9	...	...	1	10	13·6
Chorea	7	4	...	...	...	11	78·0
Locomotor Ataxia	...	5	1	...	...	6	12·6
Neuralgia and Neuritis	11	11	3	...	1	25	30·3
Other Diseases of the Nervous System	12	35	6	...	3	53	23·9
Diseases of the Eye and Adnexa	10	4	2	...	...	16	17·8
Diseases of the Ear	22	20	1	...	...	43	20·3
Encephalitis	...	1	1	...	...	2	24·0
Cerebral Embolism and Thrombosis	1	4	...	2	...	7	27·7
Infantile Convulsions under 5	1	1	...	...	1	2	2·5
Total, Class 2	68	112	27	27	15	234	...
CLASS 3.—DISEASES OF THE CIRCULATORY SYSTEM.							
Angina Pectoris	...	...	1	...	...	1	42·0
Acute Endocarditis	2	49	2	19	1	72	44·8
Organic Diseases of the Heart	2	56	4	27	13	89	42·7
Diseases of the Arteries, Atheroma, &c.	...	...	...	...	...	...	...
Embolism and Thrombosis	1	1	...	1	1	3	19·0
Diseases of the Veins (Varices, Ulcer, and Hæmorrhoids)	59	13	3	...	6	75	27·8
Diseases of the Lymphatic System	15	4	...	...	...	19	19·9
Hæmorrhage	...	...	...	...	...	...	...
Pericarditis	...	...	...	2	1	2	13·5
Aneurism	...	...	...	1	1	1	21·0
Arteriosclerosis	...	16	1	2	...	19	33·5
Other Diseases—Circulatory System	...	...	...	...	...	...	...
Total Class 3	79	139	11	52	23	281	...

TABLE VII.—Return of the Number of Persons under Treatment, &c.—*continued.*

	Discharged during the year.				Remaining in on 31st December, 1928.	Total.	Average number of days in Hospital.
	Cured.	Relieved.	Un-relieved.	Died.			
CLASS 4.—DISEASES OF THE RESPIRATORY SYSTEM.							
Diseases of the Nasal Fossæ	74	13	4	...	...	91	10·0
Diseases of the Larynx	9	2	...	...	...	11	11·0
Capillary Bronchitis	1	...	...	...	...	1	18·0
Acute Bronchitis	31	4	...	1	...	36	21·
Chronic Bronchitis	10	27	1	2	4	40	33·1
Broncho-Pneumonia	28	1	2	14	1	45	19·2
Pneumonia	256	8	...	63	17	327	24·3
Pleurisy	54	9	1	3	5	67	18·2
Asthma	4	22	1	2	8	29	29·2
Other Diseases of the Respiratory System	3	8	1	1	3	13	70·4
Congestion and Gangrene of Lung	...	...	...	...	...	...	...
Bronchitis, Unspecified	13	2	...	...	4	15	16·1
Total, Class 4	483	96	10	86	42	675	...
CLASS 5.—DISEASES OF THE DIGESTIVE SYSTEM.							
Gastritis	14	14	...	...	1	28	16·9
Diseases of the Teeth and Gums	...	...	...	...	1	...	9·7
Diseases of the Mouth and its Associated Organs	19	5	4	...	5	28	34·4
Diseases of the Pharynx	382	13	2	...	...	397	9 6
Ulcer of the Stomach	17	27	1	6	...	51	27·3
Other Diseases of the Stomach (Cancer excluded)	10	4	...	1	2	15	36·0
Diarrhœa and Enteritis (children under two years only)	...	...	...	2	...	2	13·2
Diarrhœa and Enteritis (children over two years and adults)	29	6	1	...	...	36	
Appendicitis	335	15	1	12	10	363	16·9
Hernia, Intestinal Obstruction	97	11	9	10	3	127	30·5
Other Diseases of the Intestines	68	17	4	2	5	91	26·0
Diseases of the Anus and Fæcal Fistulæ	...	...	...	...	...	...	...
Cirrhosis of the Liver	...	8	1	4	...	13	27·4
Biliary Calculi	...	...	...	...	3	...	...
Other Diseases of the Liver	12	4	2	4	...	22	34·6
Simple Peritonitis (non-puerperal)	6	8	1	2	4	17	18·7
Hydatid undefined	...	2	...	1	1	3	44·3
Other Diseases of Digestive System	...	1	...	1	9	2	14·7
Oesophagus, Stricture of	...	...	1	...	1	1	32·0
Ulcer of Duodenum	16	12	...	2	...	30	50·0
Total, Class 5	1.005	147	27	47	45	1,226	...
CLASS 6.—DISEASES OF THE GENITO-URINARY SYSTEM AND ADNEXA (NON-VENEREAL).							
Acute Nephritis	18	13	...	7	...	38	10·0
Uterine Hæmorrhage	1	2	...	...	3	3	10·0
Other Diseases of the Kidneys and their Adnexa	25	28	...	6	15	59	27·4
Calculi of the Urinary Passages	17	18	1	1	1	37	21·9
Diseases of the Bladder	17	20	1	1	5	39	25·6
Other Diseases of the Urethra, Urinary Abscess, &c.	13	32	2	2	5	49	15·1
Diseases of the Prostate	15	23	2	7	6	47	35·5
Non-venereal Diseases of the Male Genital Organs	27	5	2	...	...	34	13·6
Salpingitis and Pelvic Abscess	101	72	10	4	6	187	33·3
Uterine Tumour (non-Cancerous)	25	6	2	...	4	33	18·2
Other Diseases of the Uterus	...	...	...	...	...	...	...
Cysts and other Ovarian Tumours	14	4	2	2	...	22	20·7
Other Diseases of the Female Genital Organs	43	21	8	...	...	72	18·0
Non-puerperal Diseases of the Breast (cancer excepted)	12	1	1	...	...	14	21·5
Chronic Nephritis	...	22	1	23	4	51	35·7
Total, Class 6	328	267	32	58	49	685	...
CLASS 7.—PUERPERAL CONDITIONS.							
Abortion	543	15	4	10	...	572	12·5
Ectopic Gestation	18	1	...	1	2	20	29·5
Hyperemesis	...	...	...	...	1	...	...
Pyelites	61	53	2	1	4	117	19·8
Hæmorrhage	3	2	...	...	...	5	12·6
Retroversion	...	...	...	...	...	...	...
Albuminuria	...	...	...	...	...	...	...
Pregnancy	15	10	4	2	13	31	6·0
Other Accidents of Labour	4	...	1	...	6	5	19·0
Puerperal Diseases of the Breast	3	...	...	...	1	3	40·0
Puerperal Septicæmia	2	1	...	10	1	13	29·9
Total, Class 7	649	82	11	24	28	766	...
CLASS 8.—DISEASES OF THE SKIN AND OF THE CELLULAR TISSUE.							
Gangrene	...	...	...	...	1	...	...
Phlegmon, Acute Abscess	105	15	...	4	...	124	19·3
Other Diseases of the Skin and Adnexa	97	41	3	1	6	142	27·6
Scabies	...	...	...	...	...	...	...
Furuncle	34	6	1	1	2	42	16·9
Elephantiasis	...	...	...	...	1	...	...
Total, Class 8	236	62	4	6	10	308	...

TABLE VII.—Return of the Number of Persons under Treatment, &c.—*continued.*

	Discharged during the year.				Remaining in on 31st December, 1928.	Total.	Average number of days in Hospital.
	Cured.	Relieved.	Un-relieved.	Died.			
CLASS 9.—DISEASES OF THE ORGANS OF LOCOMOTION.							
Non-tuberculous Disease of the Bones	35	22	6	4	17	67	90·5
Arthritis and other Diseases of the Joints (Tuberculosis and Rheumatism excepted)	23	33	6	...	5	62	35·4
Other Diseases of the Organs of Locomotion	20	12	1	1	7	34	44·8
Total, Class 9	78	67	13	5	29	163	...
CLASS 10.—MALFORMATIONS.							
Congenital Malformations	13	2	3	1	1	19	10·9
Total, Class 10	13	2	3	1	1	19	...
CLASS 11.—DISEASES OF EARLY INFANCY.							
Total, Class 11	9	1	...	2	...	12	14·6
CLASS 12—OLD AGE							
Senility	...	1	3	3	1	7	21·7
Total, Class 12	...	1	3	3	1	7	...
CLASS 13.—VIOLENCE.							
Lysol Poisoning	...	...	...	...	...	...	...
Scalds and Burns (other than fire)	...	...	...	...	...	...	...
Poisoning by Food (not ptomaine)	...	...	...	...	...	...	...
Bite of Snake or Insect	8	1	...	1	...	10	...
Firearms Accidents	4	...	...	...	1	4	10·2
Cutting Instruments	16	3	...	1	1	20	17·1
Burning by Fire	12	...	...	...	1	12	46·3
Falls	53	19	...	3	...	75	36·9
Crushings	...	...	...	...	...	...	...
Railways and Tramways and Motor	70	22	2	4	...	98	27·7
Injuries by Vehicles and Horses	...	...	...	...	...	...	...
Shock	8	3	...	...	...	11	10·2
Other Injuries	19	4	1	3	1	27	79·5
Assault	2	1	...	...	...	3	3·3
Fractures (not obtainable)	...	...	...	...	14	...	...
Other Acute Poisonings (except gas)	...	...	...	...	...	...	...
Total, Class 13	192	53	3	12	18	260	...
CLASS 14.—ILL-DEFINED DISEASES.							
Malnutrition	...	...	...	...	...	...	...
Debility	...	3	...	...	...	3	13·0
Marasmus	...	...	...	1	...	1	...
Observation	32	...	...	...	2	32	8·3
No disease	28	...	...	...	2	28	13·3
Nurslings with mothers, no disease	18	...	...	...	1	18	19·5
Mothers with nurslings, no disease	3	...	...	...	...	3	8·6
Total, Class 14	81	3	...	1	5	85	...
SUMMARY.							
Total, Class 1.—General Diseases	3,757	1,128	82	330	461	5,297	...
,, 2.—Diseases of the Nervous System and of the Organs of Special Sense	68	112	27	27	15	234	...
,, 3.—Diseases of the Circulatory System	79	139	11	52	23	281	...
,, 4.—Diseases of the Respiratory System	483	96	10	86	42	675	...
,, 5.—Diseases of the Digestive Organs	1,005	147	27	47	45	1,226	...
,, 6.—Diseases of the Genito-Urinary System and Adnexa	328	267	32	58	49	685	...
,, 7.—Diseases of the Puerperal Condition	649	82	11	24	28	766	...
,, 8.—Diseases of the Skin and of the Cellular Tissue	236	62	4	6	10	308	...
,, 9.—Diseases of the Organs of Locomotion	78	67	13	5	29	163	...
,, 10.—Malformation	13	2	3	1	1	19	...
,, 11.—Infancy	9	1	...	2	...	12	...
,, 12.—Old Age	...	1	3	3	1	7	...
,, 13.—Violence	192	53	3	12	18	260	...
,, 14.—Ill-defined Diseases	81	3	...	1	5	85	...
Grand Total	6,978	2,160	226	654	727	10,018	...

Table VIII.—Operations performed during 1928.

NOTE.—" Recovered" means lived for at least ten days after operation.

	Recovered.		Died.		Total.
	Male.	Female.	Male.	Female.	
1. *Alimentary System.*					
Repair of hare-lip	2	...	...	...	2
Repair of cleft palate	...	...	...	...	...
Oesophagascopy	5	1	...	...	6
Removal of foreign body from stomach	1	...	...	...	1
Gastrostomy	2	...	...	...	2
Gastro-enterostomy	9	1	...	...	10
Oversewing gastric ulcer	...	2	...	...	2
Oversewing duodenal ulcer	4	...	...	...	4
Pyloro-plasty	...	...	...	...	...
Enterostomy	1	3	...	1	5
Entero-enterostomy	1	...	1	...	2
Colostomy	6	3	...	2	11
Caecostomy	1	2	2	...	5
Bowel resection	4	1	...	...	5
Appendicectomy	179	153	4	...	336
Cholecystectomy	3	32	...	2	37
Cholecystostomy	1	5	1	1	8
Choledochotomy	...	...	...	...	...
Cholecystenterostomy	2	2	1	...	5
Radical cure of faecal fistula	...	...	...	...	...
Excision of retro-peritoneal cyst	...	...	...	...	...
Draining Abcess of Peritoneal cavity	13	7	4	1	25
Draining abdominal hydatid	2	3	...	...	5
Freeing of adhesions	3	9	1	...	13
Laparotomy	15	13	1	1	30
Fistula in ano	6	2	...	...	8
Fissure in ano	1	1	...	...	2
Sigmoidoscopy	1	3	...	...	4
Herniae—					
Inguinal	67	2	2	...	71
Femoral	3	1	...	...	4
Umbilical	...	6	...	1	7
Incisional	2	6	...	...	8
	334	258	17	9	618
2. *Genito-urinary System.*					
Circumcision	50	...	...	...	50
Dilatation of urethral stricture	2	...	...	...	2
External urethrotomy	1	...	...	...	1
Plastic on urethra	...	...	...	...	...
Drainage of extravasation of urine	2	1	1	...	4
Vavicocele	4	...	...	...	4
Hydrocoele	7	...	...	...	7
Orchidectomy	7	...	...	...	7
Prostatectomy	13	...	2	...	15
Cystoscopy	42	31	...	...	73
Diathermy to bladder	2	1	...	...	3
Supra pubic cystostomy	5	1	...	...	6
Uretero-lithotomy	...	...	...	...	...
Nephrotomy	1	1	...	...	2
Nephrectomy	4	1	...	...	5
Nephro dexy	...	...	...	...	...
Nephro-lithotomy	3	6	...	...	9
	143	42	3	...	188
3. *Gynaecological System.*					
Colpo-perineorraphy	...	7	...	...	7
Colpotomy	...	33	...	1	34
Trachelorraphy	...	1	...	...	1
Diathermy to cervix uteri	...	2	...	...	2
Insertion of radium cervix uteri	...	5	...	...	5
Curettage uteri	...	661	...	1	662
Curettage cervix uteri	...	2	...	...	2
Induction of abortion	...	8	...	...	8
Salpingectomy	...	44	...	3	47
Salpingo-oophorectomy	...	49	...	1	50
Oophorectomy	...	8	...	...	8
Internal shortening	...	14	...	...	14
External shortening	...	1	...	...	1
Ventro-fixation	...	...	...	...	...
Hysterectomy	...	36	...	1	37
Oversewing perforation of uterus	...	1	...	...	1
	...	872	...	7	879
4. *Cellular and Cutaneous System.*					
Incision	95	81	1	...	177
Excision of ulcer	2	2	...	...	4
Excision of wart	...	...	...	...	...
Avulsion of nail	2	5	...	...	7
Excision of cyst	5	...	4	...	9
Curettage of sinus	5	4	...	...	9
Skin graft	4	1	...	...	5
Suture of wounds	6	0	...	...	6
	119	97	1	...	217
5. *Osseous and Arthritic System.*					
Reduction of fracture	12	12	...	...	24
Reduction of dislocation	2	...	...	...	2
Plating of fracture	2	...	...	...	2
Wiring of fracture	1	2	...	...	3
Osteotomy	22	6	2	...	30
Sequestrectomy	17	7	...	...	24
Amputation of leg	15	6	...	...	21
Amputation of arm	...	...	...	...	...
Amputation of finger	4	2	...	...	6
Amputation of toe	2	...	...	...	2
Excision of coccyx	...	...	...	...	...
Excision of semi-lunar cartilage	2	...	...	...	2
Laminectomy	1	...	...	...	1
Excision of ganglion	1	2	...	...	3
Tenotomy	...	...	...	...	...
Arthrotomy	3	2	...	...	5
Bone graft	1	...	...	...	1
	85	39	2	...	126
6. *Respiratory System.*					
Resection of turbinate bones	3	4	...	...	7
Removal of nasal polypi	2	4	...	...	6
Resection of nasal septum	18	5	...	...	23
Tracheotomy	1	...	1	...	2
Thoracotomy	17	20	1	...	38
Broncoscopy	...	...	...	...	...
Drainage of hydatid of lung	...	...	...	...	...
	41	33	2	...	76
7 *Circulatory System.*					
Excision of varicose veins	2	2	...	...	4
Haemorrhoidectomy	30	5	...	...	35
	32	7	...	...	39
8. *Lymphatic and Glandular System.*					
Tonsils and adenoids	89	140	...	...	229
Adenoidectomy	6	7	...	...	13
Thyroidectomy	...	9	...	...	9
Excision of gland	...	...	...	...	...
	95	156	...	...	251
9. *New Growths.*					
Epithelioma of skin	3	1	...	...	4
Rodent ulcer (excision)	2	...	...	...	2
Excision of lip and glands	15	...	...	...	15
Excision of tongue and glands	1	1	...	...	2
Excision of tonsil and glands	...	...	...	...	...
Excision of jaw	2	...	...	...	2
Excision of papilloma of larynx	...	...	...	...	...
Excision of malignant larynx and glands of neck	...	1	...	...	1
Partial gastrectomy	3	1	...	...	4
Excision of carcinoma of bowel	...	...	...	...	...
Excision of malignant rectum	3	...	...	...	3
Excision of breast and glands	...	9	...	1	10
Excision of benign tumor	5	18	...	...	23
	34	31	...	1	66
10. *Miscellaneous.*					
Paracentesis tympani	38	54	...	...	92
Draining frontal sinus	...	5	1	...	6
Draining maxillary antrum	27	17	...	...	44
Draining mastoid antrum	27	26	...	1	54
Cerebral decompression	3	...	...	...	3
Radical cure meningocoele	...	...	...	...	...
Intracranial trigeminal neurectomy	...	2	...	...	2
Ramisectomy	...	2	...	...	2
Lumbar puncture	20	...	...	...	20
Diathermy to lip	5	...	...	...	5
Teeth extraction	3	1	...	...	4
Excision of ranula	2	...	...	...	2
Enucleation of eye	1	...	...	...	1
Removal of foreign body	2	4	...	...	6
Arrest of haemorrhage	3	2	...	...	5
Plaster fixation	...	5	...	...	5
Examination under anaesthetic	6	24	...	...	30
Surgical dressings	6	8	...	...	14
	143	150	1	1	295

TABLE VIII.—Operations performed during 1928—*continued.*

Summary of Operations.

	Recovered.		Died.		Total.
	Male.	Female.	Male.	Female.	
1. Alimentary	334	258	17	9	618
2. Genito-urinary	143	42	3	...	188
3. Gynaecological	...	872	...	7	879
4. Cellular and cutaneous	119	97	1	...	217
5. Osseous and arthritic	85	39	2	...	126
6. Respiratory	41	33	2	...	76
7. Circulatory	32	7	...	...	39
8. Lymphatic and glandular	95	156	...	...	251
9. New growths	34	31	...	1	66
10. Miscellaneous	143	150	1	1	295
	1,026	1,685	26	18	2,755

General Anesthetics.

Kelene and ether, 1,847; ether, 304; chloroform, 18; chloroform and ether, 7; local, 136; intrapharyngeal ether, 270; intra-tracheal ether, 7; kelene, 94; spinal, 3. Total, 2,686.

STATEMENT OF WORKING EXPENSES OF THE COAST HOSPITAL FOR THE YEARS 1927-28.

TABLE IX.—Maintenance and Treatment of Patients and Staff.

	1927.	Average.		1928.	Average.
	£ s. d.	£ s. d.		£ s. d.	£ s. d.
A. Salaries and Wages—					
1. Administrative	2,159 2 0			2,142 17 0	
2. Medical	3,959 7 2			4,208 15 6	
3. Clerical	2,961 0 6			2,987 7 11	
4. Dispensary	1,111 2 2			1,179 14 4	
5. Nursing	29,919 9 8			29,961 11 10	
9. Laundry	3,249 12 1			3,429 0 2	
10. Tradesmen and Mechanics	4,056 1 3			4,628 9 0	
11. Cleaning and General	12,274 2 7			13,020 8 0	
12. Farm and Garden	920 18 7			764 18 4	
13. X-ray	306 0 0			316 0 0	
	60,916 16 0	85 16 1		62,639 2 1	84 18 10
B. Provisions—					
1. Meat	3,613 19 6			4,384 2 7	
2. Milk	2,444 10 9			2,543 6 1	
3. Butter	2,576 10 10			2,482 15 8	
5. Bread and Flour	1,507 14 7			1,871 5 9	
6. Eggs	1,751 8 11			2,037 0 7	
7. Fish, fresh	1,530 17 10			1,192 8 5	
8. Poultry	1,351 8 2			1,690 3 1	
9. Groceries	4,458 15 7			4,347 18 2	
10. Vegetables and Fruit	1,489 16 2			1,210 10 5	
11. Malt Liquors	3 0 0			9 1 6	
12. Ice	95 0 10			87 0 4	
13. Cream	415 5 9			309 16 5	
	21,238 8 11	29 18 4		22,155 9 0	30 1 0
C. Drugs and Surgical Appliances—					
1. Drugs, &c.	5,577 15 4			6,322 0 0	
2. Dressings and Bandages	349 13 1			416 4 2	
3. Surgical Appliances, Renewals	176 1 9			32 7 11	
4. Surgical Instruments, Renewals	219 8 1			217 0 5	
5. Stimulants	324 17 6			274 18 5	
	6,647 18 9	9 7 1		7,262 10 11	9 17 1
D. Fuel, Light, and Power—					
1. Coal, Coke, and Wood	3,715 9 3			2,843 4 2	
4. Electricity	1,278 18 7			541 3 3	
5. Electrical Fittings, Renewals	276 15 3			258 18 8	
	5,271 3 1	7 8 5		3,643 6 1	4 18 10
E. Domestic—					
1. Bedding and Bed Linen	1,478 19 4			1,611 6 0	
2. Clothing	756 15 4			871 2 10	
3. Drapery	752 14 11			723 12 0	
4. Uniforms	336 5 7			4 14 8	
5. Renewals of Furniture	429 5 10			596 1 10	
6. Ironmongery and Cutlery, &c.	221 15 6			362 5 10	
7. Brushware, Earthenware, &c.	316 12 2			363 16 1	
8. Laundry Materials	475 19 3			436 10 4	
	4,768 7 11	6 14 4		4,969 9 7	6 14 10
F Printing and Stationery—					
1. Printing and Stationery	457 6 9			480 12 9	
3. Postage	100 7 0			82 14 6	
	557 13 9	0 15 8		563 7 3	0 15 2
G. Maintenance of Buildings and Grounds—					
1. Ordinary Repairs and Alterations	767 11 11			1,039 6 9	
2. Roadways and Grounds	169 13 10			67 1 8	
	937 5 9	1 6 5		1,106 8 5	1 10 0
J. Miscellaneous—					
1. Rates and Taxes	....			273 16 4	
2. Insurance	225 10 9			210 7 5	
3. Burials and Coffins	42 6 9			46 19 2	
4. Telephones	523 8 10			522 3 11	
7. Petty Expenses	653 1 1			506 1 4	
8. Unclassified	553 2 1			616 11 4	
	1,997 9 6	2 16 4		2,175 19 6	2 19 2
K. Extraordinary Expenditure—					
1. Surgical Instruments	4 7 0			....	
2. Appliances	62 0 0			78 6 0	
3. Machinery	17 16 5			175 2 10	
4. New Furniture	100 11 6			881 0 11	
5. New Buildings and Additions	....			....	
6. Miscellaneous	....			....	
7. Drapery	....			....	
8. Ironmongery	....			....	
9. Brushware	....			....	
10. Bedding and Bed Linen	....			....	
11. Special Repairs	26 16 0			25 0 0	
	211 10 11	0 6 0		1,159 9 9	1 11 5

TABLE IX.—Maintenance and Treatment of Patients and Staff—*continued.*

	1927.	Average.		1928.	Average.
L. Special Department—	£ s. d.	£ s. d.		£ s. d	£ s. d.
1. X Ray	350 16 11			491 4 9	
	350 16 11	0 9 11		491 4 9	0 13 4
M. Farm and Garden, Live Stock, &c.—					
1. Purchase of Horses and Cows	42 0 0			60 0 0	
2. Purchase of Fodder	1,916 1 3			1,727 5 7	
3. Miscellaneous	33 18 0			109 12 9	
	1,996 19 3	2 16 3		1,896 18 4	2 11 3
N. Auxilary Hospital—					
1. Salaries and Wages	2,056 2 6			3,599 7 10	
2. Maintenance	1,984 17 10			3,913 7 10	
3. Equipment	1,976 14 1			....	
	6,017 14 6	8 9 6		7,512 15 8	10 3 9
Total Expenditure	110,912 5 2	156 4 4		115,576 1 4	156 14 8
Add value of goods received from other Institutions	5 17 0			3 6 6	
	110,918 2 2			115,579 7 10	
Deduct value of goods supplied to other Institutions	28 0 0			....	
	110,890 2 2			115,579 7 10	
Add value of Stock on hand, 31st Dec., 1927	6,054 1 9			5,236 2 3	
	116,944 3 11			120,815 10 1	
Deduct value of Stock on hand, 31st Dec., 1928	5,236 2 3			5,101 15 4	
	111,708 1 8			115,713 14 9	
Deduct Extraordinary Expenditure, Cost of Out-door Patients Equipment Auxilary Hospital	4,143 2 9			2,151 13 0	
	107,564 18 11			113,562 1 9	
Average cost per occupied bed, General and Infectious Division, based on upkeep Expenditure	....	151 10 1		....	154 0 0
Deduct Collections paid to Revenue	8,924 4 7	....		11,637 2 2	....
	98,640 14 4	....		101,924 19 7	....
Net cost per occupied bed, General and Infectious Division	....	138 18 7		....	138 4 5

TABLE X.—Amount expended from the Vote of the Public Works Department not included in the foregoing statistics.

	1927.		1928.	
Steam and Hot Water Services—	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Repairs—Steam and Hot Water Services	32 15 4	....	....	....
Repairs and Renewals of Boilers	359 19 11	....	127 14 2	....
Hot Water Services	440 18 5	....	506 18 1	....
Rebuilding Chimney Flues	....	....	....	....
Total	833 13 8	833 13 8	634 12 3	634 12 3
Electric Light and Power Service—				
Electric Maintenance	....	....	....	....
Total	833 13 8	833 13 8	634 12 3	634 12 3
General—				
Repairing Laundry Plant	39 6 0	....	1,499 11 6	....
Repairs and Renovations of Buildings	2,122 13 2	....	6,389 4 1	....
Erection, Herdsman's Cottage	....	....	....	....
Repairs and Extensions Water Service	....	....	....	....
New Buildings and Additions	4,120 16 6	....	5,897 19 8	....
Erection, New Weighbridge	624 10 5	....	....	....
Renovations, Randwick Auxiliary Hospital	611 19 1	....	1,703 6 4	....
Total	7,519 5 2	7,519 5 2	15,490 1 7	15,490 1 7
Grand Total £	8,352 18 10	8,352 18 10	16,124 13 10	16,124 13 10

TABLE XI.—SUMMARY TABLE, showing the work of the Coast Hospital and its cost each year, from 1884 to 1928.

Year.	No. of Patients admitted.	Average residence of discharged patients in days.	Rate of Mortality on cases treated.	Infectious Diseases included in foregoing columns.																				Average daily number.	Cost per occupied bed.	Wines, spirits, &c., cost per head (included in foregoing columns).
				Typhoid Fever.		Variola.		Measles.		Scarlet Fever.		Whooping Cough.		Diphtheria.		Influenza.		Plague.		Erysipelas.		Other Epidemic Diseases.				
				Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.		£ s. d.	£ s. d.
1884	1,132	29·33	4·04	235	25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	104·33	58 1 1¼	2 3 2¼
1885	1,204	37·06	7·05	285	50	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	150·05	51 16 8	1 11 2¾
1886	1,278	41·06	9·38	392	53	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	146·33	52 0 8	1 10 0¾
1887	1,726	42·05	9·21	286	36	...	...	18	...	43	...	...	...	...	...	...	...	...	...	...	...	1	...	198·56	42 14 1½	0 10 9¼
1888	1,694	42·23	5·55	241	15	...	...	33	...	52	...	...	...	1	...	...	...	...	...	45	...	3	...	197·12	41 13 2	0 8 8
1889	1,813	39·09	5·44	342	24	...	...	10	1	21	...	36	2	7	2	...	...	...	...	52	2	2	...	198·09	44 17 4¾	0 6 4½
1890	1,529	42·00	7·03	140	21	...	...	5	...	14	...	19	...	1	...	...	...	...	...	19	...	7	...	178·00	55 7 5	0 5 11
1891	1,748	40·00	3·23	88	8	...	...	1	...	22	...	25	2	4	...	...	...	...	...	31	...	7	...	193·00	50 2 6	0 5 2¾
1892	1,644	44·06	4·04	61	10	...	...	2	...	39	...	29	2	6	3	...	...	...	...	24	...	16	...	200·03	44 17 11¼	0 7 6½
1893	2,274	32·08	4·05	83	10	...	...	281	8	195	12	7	...	9	3	...	...	...	...	36	...	7	...	193·05	47 8 0	0 10 1
1894	2,158	27·06	4·03	143	12	...	...	7	1	118	9	28	3	9	3	...	...	...	...	36	3	26	...	176·04	55 7 4¼	1 3 6¾
1895	2,451	24·06	3·07	96	6	...	...	1	...	60	...	25	1	45	1	...	...	...	...	51	...	10	...	176·03	59 1 11	1 1 6¾
1896	2,213	31·03	5·04	236	19	...	...	2	...	61	2	3	...	11	1	...	...	...	...	63	...	1	...	204·06	51 6 1¾	1 4 4
1897	2,307	32·06	5·05	128	11	...	...	...	...	235	3	...	...	25	...	...	...	...	...	100	7	6	...	224·04	50 19 2½	1 9 10
1898	2,694	31·04	5·38	163	18	...	...	319	15	350	7	...	...	27	4	...	...	...	...	70	2	...	...	231·00	64 14 10¾	1 14 3¼
1899	2,359	36·30	4·79	148	13	...	...	10	...	134	2	42	10	25	2	...	...	...	...	54	...	8	...	224·25	73 10 11¾	1 13 10
1900	2,513	30·10	5·20	247	25	...	...	29	...	116	2	2	...	7	2	...	...	...	...	33	2	4	...	214·40	72 18 8¼	1 8 2¾
1901	2,688	31·24	5·75	214	21	...	...	131	1	150	5	15	...	65	4	...	...	...	...	49	5	11	...	255·50	59 4 3½	0 16 1½
1902	2,672	30·94	6·29	144	5	...	...	73	...	313	20	26	...	64	5	...	...	128	26	109	8	6	...	256·85	66 9 4¼	0 13 10¼
1903	3,359	31·72	4·67	166	20	...	...	62	1	585	21	13	3	92	...	...	...	2	...	84	6	16	1	300·76	61 17 11¼	0 5 2¾
1904	3,439	30·94	5·17	178	24	...	...	81	1	371	11	40	4	301	11	...	...	10	4	113	5	44	...	305·16	63 2 11¼	0 7 8¼
1905	3,298	31·81	5·20	139	20	...	...	43	1	284	6	1	...	313	10	...	...	16	4	100	6	7	...	289·32	59 12 0¾	0 8 4
1906	2,965	37·03	3·56	84	7	...	...	55	...	503	11	...	...	267	9	...	...	15	4	80	4	3	...	308·67	56 13 1½	0 4 0½
1907	3,051	37·16	5·93	101	12	...	...	157	5	336	5	93	20	389	23	...	...	41	11	58	...	...	...	307·41	58 17 8¼	0 4 5¼
1908	3,147	32·89	5·44	114	13	...	...	17	1	420	10	6	1	360	11	...	...	7	2	62	7	...	...	306·83	61 11 5	0 4 0¾
1909	2,971	31·13	5·53	96	8	...	...	55	...	339	6	4	...	500	12	...	...	22	7	72	3	...	...	295·33	63 5 4½	0 4 1¾
1910	3,538	30·52	5·39	85	7	...	...	189	12	150	6	74	15	909	18	...	...	...	...	40	3	41	...	312·66	62 2 0¾	0 2 5¼
1911	3,474	29·19	5·32	66	8	...	...	70	...	134	...	67	12	974	24	...	...	...	...	48	4	...	...	322·62	64 0 1¼	0 4 0½
1912	4,170	29·54	5·76	67	8	...	...	475	46	108	4	29	5	1284	36	...	...	...	...	73	8	5	...	335·45	77 15 1½	0 4 1¾
1913	3,702	31·83	5·13	77	10	4	...	93	...	287	7	64	14	994	28	...	...	...	...	48	5	22	...	335·51	87 6 6¼	0 3 3¼
1914	4,032	32·35	3·81	73	12	6	...	82	1	628	7	36	4	977	10	...	...	...	...	34	1	20	...	373·11	74 7 5	0 1 0½
1915	4,806	30·09	4·12	123	10	22	...	357	2	1279	19	4	...	925	35	...	...	...	...	42	8	12	3	440·00	69 5 7	0 2 3½
1916	4,618	32·29	3·07	59	8	14	...	206	1	835	22	53	9	1101	32	...	...	...	...	55	1	244	...	447·00	77 4 11	0 4 1¼
1917	4,320	36·49	3·73	16	2	4	...	147	6	498	4	21	4	1328	11	...	...	...	...	79	7	207	...	433·12	94 10 9	0 4 4
1918	4,556	39·60	4·20	31	6	1	...	323	13	314	9	63	8	1251	13	...	...	...	...	92	10	38	...	513·41	98 12 2	0 4 8
1919	5,556	20·67	8·13	25	1	1	...	62	3	213	5	20	1	571	10	2,966	313	...	...	66	2	20	...	385·2	159 0 4	0 8 3
1920	5,945	29·72	7·37	61	5	...	...	581	62	212	1	130	18	904	14	83	...	...	...	86	13	44	...	477·62	159 0 0	0 5 7
1921	6,450	29·3	5·6	49	12	...	...	36	4	174	...	40	4	1360	15	215	16	1	1	102	4	52	...	522·3	156 17 8	0 7 7
1922	6,894	27·54	5·6	33	15	...	...	163	5	229	3	37	2	905	11	118	1	29	6	109	7	514	3	520·16	149 12 4	0 5 8
1923	8,289	34·38	6·37	48	5	...	...	642	35	607	3	32	5	855	13	170	3	...	...	195	12	258	...	563·47	141 10 2	0 13 2
1924	8,171	24·35	5 31	51	4	...	...	85	...	1024	9	39	7	1107	16	158	1	...	...	111	4	79	...	575·29	153 1 1	0 13 0
1925	8,458	23·61	6·41	50	4	...	...	252	11	842	12	89	11	787	3	94	...	...	...	98	4	43	3	578·06	143 9 2	0 11 3
1926	10,175	23·74	5·9	60	4	...	...	701	35	1668	38	46	5	1018	13	251	5	...	...	76	5	62	...	668·09	140 18 7	0 9 10
1927	10,163	27·8	5·6	33	4	...	...	76	1	2183	53	34	5	1997	15	141	1	...	...	109	10	59	2	709·96	151 10 1	0 9 1
1928	10,102	24·5	6·5	15	2	...	...	510	62	1714	44	5	...	1149	18	150	4	...	...	130	5	23	...	737·4	154 0 0	0 7 8

2.—LEPER LAZARET.

REPORT ON LEPROSY IN NEW SOUTH WALES FOR THE YEAR ENDED 31st DECEMBER, 1928.

The Medical Superintendent of the Coast Hospital to the Director-General of Public Health.

The Coast Hospital, Sydney, N.S.W.

Sir,

On 1st January, 1928, 17 persons remained under detention at the lazaret. (*See* Appendix A.)

During the year 4 persons were reported to the Board under the Public Health Act, 1902, Part III, as being suspected lepers, and after careful inquiry were duly certified as suffering from leprosy, and admitted to the lazaret by warrant of the Board; 1 other was admitted for observation and subsequently discharged.

One death occurred during the year, viz. :—A.R.B., Case CLXXII.

The total number of persons admitted since 1883, when patients first began to be received (though the notification of leprosy was first made compulsory and the detention of lepers provided for by law only towards the end of 1890), is 178.* Distributed under nationalities, the account stands as follows :—

	Admitted.	Readmitted.	Discharged.	Repatriated.	Died.	Remaining in at 31 Dec., 1928.
Whites, of European descent—						
New South Wales	45	3	15	......	26	7
Victoria	2	......	......	......	2	......
Queensland	4	......	1	......	1	2
Northern Territory	1	......	1	......	......	......
New Zealand	1	......	......	......	1	......
Fiji	2	......	1	......	1	......
England	12	......	3	......	8	1
Ireland	8	......	2	......	5	1
Scotland	1	......	1	......	......	......
Germany	4	......	1 absconded.	1	2	......
Belgium	1	......	......	......	1	......
U.S. America	1	......	......	......	1	......
Greece	2	......	......	1	......	1
Malta	2	......	1 absconded.	......	1	......
Sweden	1	......	......	......	......	1
France	1	......	......	......	1	......
Mauritius	1	......	1	......	......	......
Coloured patients—						
New South Wales	3	......	1	......	......	2
West Indies	1	......	1 (in 1885).	......	......	......
India	4	......	1 absconded.	1	2	......
China	57	......	2	33	19	3
Java	1	......	......	......	1	......
New Caledonia	1	......	......	......	1	......
Pacific Island	18	......	......	5	11	2
Egypt	1	......	......	1	......	......
Zanzibar	1	......	1 (to Hong Kong at own request).	......	......	......
Syria	2	......	1	1	......	......
	178	3	34	43	84	20

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* This is the number of persons admitted; it does not agree with the highest number given in Appendix B in Roman numerals which indicates the number of cases observed, whether admitted or merely described and recorded.

Thus the number remaining in the lazaret on 31st December, 1928, was 20 persons; 16 males and 4 females.

Appendix A shows particulars of each case under detention since the year 1912*, and in Appendix B are given the usual notes of the new patients received during 1928, of patients discharged or died during the year, and a survey of the condition of patients remaining in at the end of the year.

Every opportunity has been offered to members of the medical profession to visit the lazaret for the purpose of seeing such patients as were formerly under their care, or for study of the disease.

The following statements show the expenditure for the year, and the sources from which it has been defrayed :—

STATEMENT showing the Working Expenses of the Lazarets (for men and for women) at Little Bay for the year 1928.

	£	s.	d.
Salaries	2,035	6	1
Provisions	803	14	5
Fruit and vegetables	51	9	2
Uniforms, clothing, &c.	181	14	3
Printing and stationery	3	15	0
Fuel and light	159	13	9
Wines, ales, &c.	101	5	0
Ironmongery, brushware, &c.	13	14	2
Drugs	98	18	0
Sundries	239	15	9
	£3,689	5	7

Average number of patients resident, 18·7, being equal to an average of £196 19s. 5d. per inmate per annum.

STATEMENT showing the total Expenditure of the Lazarets (for men and for women) at Little Bay during the year 1928, and from what sources the amounts were paid.

EXPENDITURE.	£	s.	d.	HOW PAID.	£	s.	d.
To working expenditure, as per statement.	3,689	5	7	From vote—Maintenance of lepers by Department of Public Health	2,838	17	5
				Transfers from Coast Hospital stock	850	8	2
Total ....£	3,689	5	7	Total ....£	3,689	5	7

The needs of the patients have been carefully supplied by experienced attendants and nurses, under direct supervision of the Medical Superintendent and the Matron of the Coast Hospital, and, as in the past, every means have been adopted to alleviate their sufferings and to mitigate the hardships of their detention.

I have, &c.,

R. J. MILLARD,

Medical Superintendent.

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* For particulars of cases under detention from 1883 see Annual Reports 1913–1927.

APPENDIX A.

RETURN showing Particulars of Lepers admitted to Little Bay, New South Wales, since the year 1912.

Name.	Sex.	Native of—	Occupation.	Admission.		Where from.	No. of Case in Clinical Notes.	Died or Discharged.
				Age on.	Date of.			
S.C.	Male....	China	Cabinet-maker	40	21 May, 1912	Boolaroo, N.S.W....	CXXVIII	
L.J.T....	,, ...	N.S.W.	School..................	12	14 Aug., ,,	Lismore	CXXIX	Discharged, 21 July, 1916.
S.M.	,, ...	Mallicolo	Labourer	50	27 ,, ,,	Maclean..............	CXXX	Died, 23 April, 1919.
J.F.	,, ...	N.S.W.	Van-driver	28	19 Sept., ,,	Glebe	CXXXI	Discharged, 1 January, 1920. Readmitted 7 Nov., 1927.
W.D......	,, ...	,, ...	Fisherman..............	22	24 June, 1913	Ulladulla, S. Coast	CXXXII	Discharged, 10 Feb., 1921.
J M.	,, ...	New Hebrides	Labourer	60	28 Nov., ,,	Tweed River	CXXXIII	Died, 17 March, 1917.
J C.M....	,, ...	N.S.W.	Miner	26	28 Jan., 1914	Homeville, W. Maitland.	CXXXIV	Died, 17th June, 1915.
W.B......	,, ...	England	Dealer	33	4 Mar.. ,,	Sydney	CXXXV	Died, 14th August, 1915
A.C.P. ...	,, ...	N.S.W.	School..................	15	23 June, ,,	Lismore..............	CXXXVI	Discharged, 12 October, 1922. Readmitted 16 Jan., 1925.
E.W.	,, ...	South Sea Islands	Labourer..............	50	17 Nov., ,,	Cudgen	CXXXVII	
H.H. ...	,, ...	England.........	Labourer	36	19 May, 1915	Hornsby	CXXXVIII	Died, 7 January, 1924.
A.D..	Female	New Hebrides	Domestic	19	1 Sept., ,,	St. Kilda, Victoria	CXXXIX	Died 18th July, 1923.
C.F.	Male...	China............	Cabinet-maker	50	18 Dec., ,,	Waterloo, N.S.W.	CXL	Discharged, 10 March, 1917.
L.F. ...	,,	England	Showman	45	9 Mar., 1916	Campbelltown	CXLI	Discharged, 2 June, 1917.
F.H. ...	Female	China	Gardener	48	25 May, ,,	Sydney...............	CXLII	Died, 15 June, 1916.
D.M. ...	Male ...	N.S.W..........	Publican	46	25 ,, ,,	Armidale	CXLIII	Discharged, 19 May 1917.
W.J.P....	,,	,, ...	School	12	25 Nov. ,,	Lismore	CXLIV	Disch. 5 November, 1924. Readmitted 1 July, 1927.
E.L.P. ...	,,	,, ...	,, ...	11	25 ,, ,,	,, ...	CXLV	Died, 27 December, 1922.
E.M.	,,	Germany	....	56	3 April, 1917	Liverpool, N.S.W.	CXLVI	Repatriated as Prisoner of War, 27 May, 1919.
C.W.	,,	England	....	80	14 ,, ,,	Sydney...............	CXLVII	Died, 18 February, 1923.
C.D.......	Female	N.S.W.	Domestic	54	30 Oct., ,,	Casino, N.S.W. ...	CXLVIII	Discharged, 12 June, 1920.
P.P.	Male ..	Greece	Cafe-proprietor	33	21 Feb , 1918	Melbourne, Vic. ...	CXLIX	
J.C.	,,	Ireland	Miner	84	5 Feb , 1919	....	CL	Died, 19 November, 1920
M.T. ...	Female	Victoria.........	Housewife	63	25 Feb., ,,	Sydney	CL(A)	Died, 1 May, 1919.
J.P.	Male...	Malta	Labourer..............	29	18 June, ,,	....	CLI	Absconded, 14 Sept., 1919
J.S.	,,	,, ...	.. ..	30	22 Dec., ,,	Kempsey	CLII	Died, 29 July, 1921.
A.S.......	,, ..	China..........	Gardener..............	64	3 Aug., 1920	Kandos N.S.W. ...	CLIII	Died, 2 August, 1923.
C.T.P. ...	,, ...	,, ...	Labourer	30	19 Oct., ,,	Nauru Island, S. Pacific	CLIV	Discharged, 25 April, 1921.
E.T.D....	,, ...	N.S.W.	Teamster..............	32	10 Nov., ,,	Bellingen, N.S.W.	CLV	Discharged 1 Dec., 1925.
T.F.......	,, ...	Ireland	Civil servant	57	20 Dec., ,,	Hobart, Tas..........	CLVI	Discharged, 18 June, 1921.
A.W. ...	Female	Sweden	Seamstress	62	18 Feb., 1921	Newcastle	CLVII	
D.A	Male...	N.S.W.	Teamster..............	71	26 May, ,,	Newcastle	XC	Died, 16 July, 1921.
J.C.	,,	N.S.W.	Fisherman	22	18 Aug., ,,	Tilba Tilba	CLVIII	
A.S. ...	Female	Queensland ...	Domestic	20	19 Jan., 1922	Redfern	CLIX	Returned to Peel Island, Queensland, 20 March, 1922.
Y.M.B....	Male ...	France	Labourer	67	7 June, 1922.	Hunter's Hill	CLX	Died, 12 August, 1922.
E. ...	,, ...	Ceylon	Sailor	24	13 Dec. ,,	Not fixed	CLXI	Repatriated, 26 June, 1923.
R.B. ...	,, ...	N.S.W.	Coach-painter	42	18 June, 1923.	Taree, N.S.W.	XCV	Died, 5 August, 1923.
C.E.B. ...	,, ...	Northern Terr.	Garage-proprietor	35	11 Aug. 1924.	Darwin, N.T.	CLXII	Discharged 16th Sept., 1925.
H.L.S. ...	,, ...	N.S.W.	Invalid-pensioner ...	37	26 Oct., ,,	Liverpool Asylum ..	CLXIII	
J.B.	,, ...	Ireland	Bush worker	61	28 Jan., 1925.	Liverpool	CLXIV	
A.C.	,, ...	Germany	Importer	45	6 Mar., ,,	Sydney	CLXV	Absconded, 21 August, 1925.
K....... ...	,, ...	Hawaii	Musician	...	7 ,, ,,	,, ...	CLXVI	Repatriated, 11 March, 1925.
A.M. ...	,, ...	China............	School	12	12 ,, ,,	,, ...	CLXVII	Repatriated, 16 December, 1925.
A D.	,, ...	N.S.W.	,, ...	7	21 April, ,,	,, ...	CLXVIII	Discharged, 1 December, 1925.
Wong Toe	,, ...	China............	Gardener	46	22 Nov., ,,	Clarence River ...	CLXIX	
H.P.	,, ..	N.S.W.	Farmer	39	14 Dec., ,,	Queensland	CLXX	Discharged, 9 Sep., 1926.
G.T.	,, ...	Scotland	Chemist	56	8 May, 1926.	Sydney.	....	Discharged, 21 July, 1926.
E.S.G. ...	Female	Queensland ...	Domestic	33	27 April, 1927.	Hunter's Hill	CLXXI	
A.R.B. ...	Male ...	N.S.W.	Farm labourer	41	6 July, ,,	Croydon	CLXXII	Died, 26 November, 1928.
W.C.	Male...	Mauritius.......	Sugar-worker.........	47	7 Feb., 1928	Queensland	CLXXIII	Discharged, 4th July, 1928.
D.E.O. ...	Female	Queensland ...	Domestic	31	29 Mar., 1928	Northern Territory	CLXXIV	
Ah Hoey.	Male ...	China	Gardener	49	28 May, 1928	Liverpool	CLXXV	
P.T.I.	,, ...	N.S.W............	Labourer	17	9 Dec., 1928	Tweed River.........	CLXXVI	
J.L.	,, ...	,, ...	,, ...	47	22 Dec. 1928	Macksville...........	CLXXVII	

NOTES.—*(a)* The cases of a few other persons who, for one reason or other, were never admitted to the lazaret, have been mentioned in the course of this series of Reports, and are additional to those shown in this Table. *(b)* On comparison with the reports for early years, differences in ages or dates of admission of some coloured patients will be observed. Those now given are the correct ages and dates. Patients remaining under treatment have their initials shown in black-faced type.

RETURN showing admissions, discharges, &c , of Patients suffering from leprosy for the years 1916–1928.

		1916.	1917.	1918.	1919.	1920.	1921.	1922.	1923.	1924.	1925.	1926.	1927.	1928.
In Lazaret on 1st January		22	25	24	24	24	24	22	21	16	15	17	15	17
Admitted during the year		5	3	1	4	4	3	3	1	2	8	1	4	5
Died during the year		1	1	...	2	1	2	2	5	2	...	1	2	1
Discharged		1	3	1	2	3	1	2	...	1	4	2	...	1
Repatriated		...	...	...	...	...	2	...	1	...	2	...	...	...
Remaining in Lazaret on 31st December	Total	25	24	24	24	24	22	21	16	15	17	15	17	20
	Males	21	19	19	19	20	17	16	12	11	13	11	14	16
	Females	4	5	5	5	4	5	5	4	4	4	4	3	4

Birthplaces of Lepers.—The inmates of the Lazaret at the close of the year 1928 were of the following nationalities:—New South Wales, 7; Australian aboriginals, 2; Queensland, 2; England, 1; Ireland, 1; Sweden, 1; Pacific Islands, 2; China, 3; Greece, 1. Total, 20.

Working Expenses of Lazaret.—During the year 1928 the total cost of the management of this Institution was £3,639 5s. 7d. Calculated on the average number of inmates, the average cost per inmate per annum was £196 19s. 5d.

APPENDIX B.

I.—New Cases.

CASE CLXXIII.—W.C., m., born 1881; admitted 7th February, 1928.

History.—Born in Mauritius, has lived in Queensland since 1900, working at many different sugar mills. In October, 1927, observed swelling of L. Ala Nasi and of skin below mouth. Later spots came in many parts. Has observed hypersensitiveness of elbows and of right leg—a slight knock would cause tingling. In January, 1928, he came to Sydney for medical advice and treatment, and was admitted to the Royal Prince Alfred Hospital. The Medical Superintendent reported that sections of a "nodule" confirmed the diagnosis of tuberculoid leprosy though no bacilli were found in these sections, and that acid fast bacilli were found in serum expressed from a lesion on the nose.

On admission the following conditions were found :—

Face.—Infiltrated areas on forehead, right side of face (extensive), Alæ Nasi and chin.

Limbs.—Scattered nodules. Nerves not palpably affected.

Trunk.—Numerous slightly raised dark red patches. Scar over left iliac crest where nodule was excised at R.P.A. Hospital.

Bacteriological.—Films made from Nares, nose and eyebrows showed no bacilli.

Discharged 4th July, 1928, in view of these negative findings and of his urgent desire to return to Queensland. The Department of Public Health, Queensland, was informed of the circumstances of his admission and discharge.

CASE CLXXIV.—D.E.O., f., born 1897; admitted 29th March, 1928.

History.—Born in North Queensland, but has lived for 30 years in the Northern Territory. In October, 1925, she had "influenza" and subsequently developed a swelling of dorsum of right foot. Later the toes were so insensitive that she burnt them when testing sensibility with a lighted match. From time to time she has observed "pins and needles" and shooting pains in the right foot. In 1927 films were made from right foot, left ear and nose, but bacilli were not found.

On admission—

Face bears many brownish slightly raised spots.

Upper and lower limbs, many similar spots.

Anæsthesia of both feet more marked in right than in left.

Bacilli—Acid-fast bacilli numerous in films from Nares, elbows and both legs.

Treatment and Progress.—Intramuscular injections of Ol. Chaulmoogra, Benzocain and Olive oil twice weekly from 27th April, 1928, to 29th August, 1928, and Sodium Hydnocarpate 30 grains daily. In June there appeared to be some improvement, and she was put on Pot. Iodide treatment. By August the eruption had become more abundant and Pot. Iodide was discontinued. Subsequently she had much pain and irritation from the eruption and became very miserable. In November the disease was more manifest in face, especially nose, and limbs. Hands were cyanosed, and painful when used.

26th November. —13th December, 1928.—Seven intravenous injections of Antimon Pot. Tart ·02 gramme in 2 cc. saline.

CASE CLXXV.—Ah Hoey, m., born 1879; admitted 28th May, 1928.

History.—Nothing certain is known of his movements up to his admission to Liverpool Hospital on 16th April, 1928. There it was found that his blood gave a positive Wassermann reaction, and also that he had leprosy.

On admission.—Height, 5 feet 5 inches. Weight, 9 stone 4 lb.

Head, Neck—Many dull red slightly raised nodules on forehead, nose, cheeks and left ear.

Trunk—Faint brown macules of pectoral and lumbar regions.

Upper limbs—Ulnar nerves both thickened. Nodules on both forearms. Cyanosis of both hands.

Lower limbs—Much maculo-nodular change on buttocks and thighs. Peroneal nerves thickened.

B. Lepræ—Obtained in abundance from nodules on the forehead, and on the left side of the lower jaw.

Since admission.—In the first six months he developed many more nodules, and the hands and wrists became swollen, red, and painful.

Treatment.—Ol. Chaulmoogra by mouth M 90 per diem. Krysolgan—intravenous injection fortnightly, ·0015 grain increased to ·75 grain.

CASE CLXXXVI.—P.T.I., m., born 1911, admitted 9th December, 1928.

History.—Born in the Tweed River district, his father a Kanaka and his mother said to be of Maltese extraction. He is ill-developed, physically and mentally, cannot read or write, and cannot give a clear account of his illness. He says he burnt his left hand five years ago and right hand one year ago—probably through anæsthesia of these parts.

On admission.—Weight, 5 stone 11 lb.

Head and neck—No hair of eyebrows, no eyelashes, many nodules on cheeks, nose, lips and ears.

Ectropion due to nodules of eyelids and cheeks.

Trunk—Numerous small nodules, also scabies.

Upper limbs—Both ulnar nerves thickened. Right hand atrophied, anæsthetic and cyanosed. Right thumb has lost terminal phalanx. Left hand much the same.

Lower limbs—Feet glossy, anæsthetic and cyanosed ulcer on left sole.

B. Lepræ—Abundant in nodules of face.

Since admission—

Treatment.—Extract of malt and codliver oil, Chaulmoogra oil 45 minims daily, Krysolgan—intravenous injection fortnightly, beginning with ·0015 grain.

Case CLXXVII.—J.L., m., born 1881; admitted 22nd December, 1928.

History.—He is an Australian half-caste aboriginal, born at Albion Park, in the South Coast district. Lived in that district until about 1900. Then was a labourer and fisherman about Sydney. After this a navvy on the construction of the North Coast Railway. About 1918 he had to cease work on account of the condition of his hands. He was a patient in the Coast Hospital in 1919, May 11th to 27th June, and Leprosy was suspected at that time, but smears made from nose and left arm showed no *B. Lepræ*. He returned to Kempsey and gained a living by gathering bones and bottles until he became "too awkward in the hands" for even this. Meanwhile he had suffered from a perforating ulcer of the left foot. He was granted an Invalid Pension and remained in the same district. For the past two years, his eyesight has been failing seriously, and it was on this account that he came to the Eye Department of Sydney Hospital where he was diagnosed as Leprosy. He has been married twice and has one grown-up daughter.

On admission.—Weight 8 stone 12 lb.

Head and Neck.—Nodules on both ear lobes. Is almost blind. In both eyes advanced Keratitis and Oedema of Conjunctiva. Is unable to close the eyes.

Trunk.—Macular staining on front of chest. Macule 3 in. x 2 in. below left axilla. Widespread anæsthesia of back.

Upper Limbs.—Both ulnars thick, hard, and insensitive, anæsthesia and loss of sweating from elbows downwards. Hands cyanosed. Main en griffe deformity of both. Nodules on both elbows.

Lower Limbs.—Both wasted. Flat nodules on knees. Cyanosis of legs and feet. Anæsthesia and anidrosis. Scars of old ulcers of soles.

B. Lepræ.—Abundant in both nares, in left earlobe and in nodule on left elbow.

II.—Discharge.

Case CLXXIII.—W.C., admitted 7th February, 1928; discharged 4th July, 1928. *Vide supra.*

III.—Death.

Case CLXXII.—A.R.B., m., born 1886; admitted 6th July 1927; died 26th November, 1928.

The downward progress noted in last report continued. In January he was circumcised on account of the increasing phimosis. Abundant *B. Lepræ* were found in the cut surface of the prepuce. In February and April he had several "fits." The eyelids became so infiltrated that the eyes were closed.

In the latest stages he was very cyanosed and almost pulseless for weeks before death.

IV.—Progress Report on Patients remaining in on 31st December, 1928.

Case LXXXVII.—F.E.B., m., born 1876; admitted 25th November, 1903. No marked change during the year.

Case LXXXVIII.—G.M.S., f., born 1885; admitted 9th February, 1904. Remains in good health. Leprosy quiescent.

Case CI.—T.A., m., born 1870; admitted 11th July, 1905. No leprous changes during year.

Case CXXIII.—J.C., m., born 1862; admitted 15th November, 1910. Ill throughout the year, sometimes very ill with high temperature. Laryngitis has got steadily worse, he has had fresh crops of nodules, and his weight has fallen from 9 stone 1 lb. in January to 8 stone 2 lb. in November.

Case CXXVIII.—S.C., m., born 1872; admitted 21st May, 1912. Leprous condition quiescent.

Case CXXXI.—J.F., m., born 1884; re-admitted 7th November, 1927. His bodily weight increased from 8 stone 3 lb. to 9 stone, and leprous condition has remained about stationary.

Case CXXXVI.—A.C.P., m., born 1898; admitted 23rd June, 1914. Vision has failed more. Now has only perception of light. Subject to attacks of iritis. Body weight remains 9 stone 11 lb. In December new treatment was begun, Krysolgan intravenously every 2 weeks—initial dose ·0015 grains.

Case CXXXVII.—E.W., m., born 1864; admitted 17th November, 1914. No advance of leprosy.

Case CXLIV.—W.J.P., m., born 1904; re-admitted 1st June, 1927. In October an exacerbation of the disease occurred. Right iritis began to develop. The left pupil had become fixed with white opacity in the centre of the pupil. Krysolgan injections, every 2 weeks, were begun in November.

Case CXLIX.—P.P., m., born 1887; admitted 21st February, 1918. The disease has gradually become less active, but he is blind and weak.

Case CLVII.—A.W., f., born 1859; admitted 18th February, 1921. Has become feebler. Facial palsy is more marked. Weight remains about 8 stone 8 lb.

Case CLVIII.—J.C., m., born 1899; admitted 18th August, 1921. Leprous manifestations have been fewer and slighter during the year. Weight about the same as last year, 9 stone 5 lb.

Case CLXIII.—H.L.S., m., born 1887; admitted 22nd October, 1924. No fresh leprous manifestations. Body-weight has increased from 9 stone 9 lb. in January, to 10 stone 6 lb. in December.

Case CLXIV.—J.B., m., born 1864; admitted 28th January, 1925. Has had better health than last year. Weight has increased from 9 stone to nearly 10 stone. Less asthma since taking Ephedrin.

Case CLXIX.—W.T., m., born 1879; admitted 22nd November, 1925. On the whole much improved. Occasional outcrop of fresh nodules.

Case CLXXI.—E.S.G., f., born 1894; admitted 27th April, 1927. Has been acutely ill, with increased eruption and pyrexia, for a great part of the year. Atrophic changes in upper and lower limbs. Taking Sod. Hydnocarpate and Strychnine.

3.—DAVID BERRY HOSPITAL.

Berry, New South Wales.

REPORT of the Secretary for the year ending 31st December, 1928.

Administrative Staff.—Visiting Medical Officer, A. L. Stafford, M.B., Ch.M.; Matron, Miss D. G. Cawood; Secretary, A. F. Hale.

Resident Staff.—Matron, 1 Sister, 1 Staff Nurse, 5 Pupil Nurses, Cook, Laundress, 2 Housemaids, 3 Male Attendants.

Number of Wards and Beds.—Wards, 6; Beds, 26 (22 beds, 4 cots).

General Cases.—20 beds, 2 cots.

Infectious Cases.—2 beds, 2 cots.

Sir,

I have the honor to submit herewith the annual report of this hospital for the year 1928:—

Admissions and Discharges, 1928.—Remaining in on 1st January, 1928, 21; admitted, 316; births, 6; total, 337. Discharged, 327; deaths, 19; remaining in on 31st December, 1928, 10. Average daily number resident, 17. Annual cost of maintenance, £4048; average annual cost per bed, £238 2s. 4d.

In-patients.—The total number of in-patients treated was 337, compared with 305 for the previous year. The average number daily was practically the same as 1927, viz., 17.

Out-patients.—The total number of out-patients attended to was 108, compared with 78 for 1927.

Anæsthetics.—The total number of operations performed was 174 (major 64, minor 110), and 41 visits were made by the Nowra doctors in connection with these operations: Dr. Foy, 3 visits; Dr. Burne, 11 visits; Dr. Rodway, 11 visits; Dr. Ryan, 16 visits.

Infectious Cases.—Six infectious cases were admitted, viz., Scarlet Fever, 2; Diphtheria, 3; Mumps, 1.

Collections.—The collections for the year totalled £421 19s. 11d., compared with £430 8s. 2d. for 1927.

Electric Light Installations.—Electric light was installed throughout the hospital towards the end of the year, and is a much appreciated benefit.

Buildings.—The buildings are in a fair state of preservation. The repairs and renovations arranged for should be expedited to prevent damage to roofs and gutterings.

Grounds.—In good order.

4.—MONTROSE MATERNITY HOSPITAL.

Lucas-road, Burwood.

REPORT FOR 1928.

Honorary Medical Officers.—G. R. Walker, M.B., Ch.M.; G. C. Harper, M.B.; J. H. R. McCutcheon, M.B., Ch.M.; W. M. A. Fletcher, M.B., Mast. Surg.

Matron.—Miss E. M. Copeman. *Staff Nurses.*—Two; trainees, 5; domestic staff, 2. It has been difficult to obtain experienced double certificated nurses for the positions of staff nurse.

Number of Wards and Beds.—Ward A, 4 beds, 4 cots; Ward C, 8 beds, 8 cots; total, 12 beds, 12 cots.

Admissions and Discharges.—Remaining in hospital on 31st December, 1927, 6; admitted, 281; discharged, 279; died, 1; number of births, 239; miscarriages, 3; babies born before admission, 4; remaining in hospital on 31st December, 1928, 5; daily average number resident, 8. Annual cost of maintenance, £1,847. Average cost per bed, £231.

Work at Montrose has been carried on as usual. There have been few abnormal cases. There was one death.

Ten nurses have received their training in obstetric nursing; all succeeded in passing hospital examinations, but unfortunately 2 failed in the State Registration examination.

No alterations or repairs of importance have been effected during the year.

E. M. COPEMAN,
Matron.

5.—FERNLEIGH PRE- AND POST-MATERNITY REST HOME.

Victoria-street, Ashfield.

REPORT FOR 1928.

Honorary Medical Staff.—G. R. Walker, M.B., Ch.M.; J. H. R. McCutcheon, M.B., Ch.M.; G. C. Harper, M.B.; W. M. A. Fletcher, M.B., Ch.M.

Resident Staff.—Matron, Miss L. D. Meares; Head Nurse, Miss H. Alcock.

Number of Beds and Wards.—Ward A, 6 beds, 6 cots; Ward B, 7 beds, 3 cots; Ward C, 4 beds; total, 17 beds, 9 cots.

Annual Return of Admissions and Discharges.—Remaining in on 31st December, 1927, 8 mothers, 3 babies; admitted during 1928, 224 mothers, 130 babies; discharged, 223 mothers, 129 babies; remaining in on 31st December, 1928, 9 mothers, 4 babies. Daily average number resident, 9.

Annual cost of maintenance, £1,356. Average cost per occupied bed, £151.

Two female children were born at Fernleigh during the year.

Sincere thanks are due to the medical staff who visit the Home when called upon.

L. MEARES,
Matron.

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6. LADY EDELINE HOSPITAL FOR BABIES.

Greycliffe, Vaucluse.

ANNUAL REPORT FOR YEAR ENDED 31st DECEMBER, 1928.

Visiting Medical Officer, Dr. L. R. PARKER.

Honorary Staff of Consultants.—Sir Charles Clubbe, Consulting Surgeon; Dr. T. Storie Dixson, Consulting Physician; Dr. R. Norman Paul, Consulting Dermatologist; Dr. Cyril Shepherd, Consulting Ophthalmic Surgeon; Dr. R. S. Godsell, Consulting Ear, Nose and Throat Surgeon.

Resident Staff.—Matron, Miss H. J. Turner; 2 Staff Nurses and 10 Pupil Nurses.

Number of Wards and Beds.—Ward 1, 12 cots; Ward 2, 15 cots; Ward 3, 4 cots and 4 beds; Flowers Ward, 5 cots; Isolation Ward, 5 cots and 1 bed; verandah cots, 6. Total—5 Wards; 47 cots, 5 beds.

Return of Admissions and Discharges.—Remaining in hospital on 1st January, 1928, 31 babies and 11 mothers; admitted during the year, 160 babies; discharged, 135; died, 26: total number treated, 191. Remaining in hospital on 31st December, 1928, 30. Daily average of cots occupied, 28·8. Average length of stay in hospital, 9·4 weeks. Mothers accommodated within the hospital, 52. Babies attending as out-patients, 95. Dressing of wounds and attendance to children suffering accidents on the beach and adjoining park, 57.

Annual cost of maintenance and treatment, £2,860. Average cost per occupied bed, £102.

Visiting Medical Officer's Report.

"Greycliffe" admitted 160 new cases in 1928, and the total number treated was 191. Twenty-six deaths occurred during the year, making a 13 per cent. ratio on the total. Nineteen of these deaths were in the first few months of the year when a severer form of epidemic manifested itself than has been experienced for some years, and a number of the children were admitted in a more or less hopeless condition. That only 7 deaths should have occurred over the remaining eight months is good evidence of the care and attention that is expended on these children, most of whom are not only exceedingly ill, but are usually only a few months, and not infrequently only several weeks of age.

L. R. PARKER, V.M.O.

The following table shows the ages on admission of all babies treated during 1928, the number of deaths, and duration of stay in hospital of fatal cases:—

	3 months.	3—6 months.	6-9 months.	9-12 months and over.	Total.
	66	30	31	64	191
Died	11	6	6	3	26
Duration of stay in hospital of fatal cases......	6 days ...1	25 days ...1	2 hours ...1	4 days ...1	
	12 ,, ...1	30 ,, ...1	3 days ...1	12 ,, .. 1	
	15 ,, ...1	40 ,, ...1	4 ,, ...1	19 ,, ...1	
	17 ,, ...1	2 months.. 3	16 ,, ...1	....	
	19 ,, ...1	....	2 months...1	....	
	20 ,, ...1	....	3 ,, ...1	....	
	21 ,, ...1	....	....	....	
	22 ,, ...1	....	....	....	
	23 ,, ...2	....	....	....	
	25 ,, ...1	....	....	....	
	11	6	6	3	26

MATRON'S REPORT.

Nature of Cases under Treatment.—Acute gastro-enteritis, 44 cases (14 deaths); acute enteritis, 64 (8 deaths); malnutrition enteritis, 20 (3 deaths); broncho-pneumonia, 6 (1 death); ileo colitis, 10; prematurity, 4; congenital heart disease, 2; otitis media, 4; acute eczema, 4; concussion, 3; purulent ophthalmia, 2; pertussis, 2; marasmus, 15. Total cases treated, 191; deaths, 26.

The mortality during the earlier months was unduly heavy, January being the most unsatisfactory for years. For the last eight months of the year only 7 deaths occurred. Admissions to Greycliffe have remained stationary or nearly so over a period of eight or nine years, which proves that there exists to-day no need for increasing accommodation for sick babies. This proves the value of combined organisation—Baby Health Centres, &c.—working in the interests of baby welfare.

Scarlet fever occurred in the nurses' quarters and quickly spread, 5 cases developing within three weeks. The patients were transferred to the Coast Hospital, and a baby who contracted the infection was also transferred.

Measles enter occasionally through admissions; there was no infection transferred during the year.

The sewing guild, which is conducted by a committee of ladies, continues to assist in keeping up stocks of baby garments, the hospital supplying materials; Mrs. Cameron still organises this useful work. The guild meets twice a week and members are very interested.

The Sun Toy Fund supplied the babies with a splendid collection of toys and other useful articles at Christmas, giving added brightness and cheerfulness to the whole Institution.

H. TURNER,
Matron.

7.—STRICKLAND CONVALESCENT HOSPITAL FOR WOMEN, CARRARA, ROSE BAY.

Report of the Matron for the year ended 31st December, 1928.

Visiting Medical Officer.—Dr. L. R. Parker.

Resident Staff.—Matron, Miss S. G. Hartley; 1 Senior and 1 Junior Nurse.

Number of Wards and Beds.—Number of wards, 9; number of beds, 32.

This hospital is utilised for women convalescent after severe illnesses.

Annual Return of Admissions and Discharges.—Number of patients remaining in on 1st January, 1928, 29; admitted during year, 646; discharged, 645; died, 1; remaining in on 31st December, 1928, 29. Total number treated during 1928, 675. Average daily number of beds occupied, 33. Annual cost of maintenance, £2,678. Average annual cost per bed, £81.

The year's work has been satisfactory. The beds were fully occupied, and patients showed a marked improvement. Several cases of severe illness occurred, necessitating removal to hospital. There was one death.

A shelter shed is in course of erection which will add greatly to the comfort of the patients.

Portion of the grounds is utilised for a dairy herd, the milk from which supplies the infants at the Lady Edeline Hospital for Babies, and practically all milk used at "Carrara."

There is a plentiful supply of fresh eggs and sufficient poultry for Christmas, Easter, etc.

S. G. HARTLEY,
Matron.

8.—DENISTONE HOUSE CONVALESCENT HOSPITAL FOR MEN, EASTWOOD.

Annual Report for the Year ended 31st December, 1928.

Visiting Medical Officers.—Drs. D. Guthrie Hunter and Stewart Oag.

Staff.—Matron, Miss I. M. Shiell; 1 Nurse; 1 Attendant.

Number of rooms used as wards, 7; indoor beds, 29.

Annual Return of Admissions and Discharges.—Patients in hospital, 31st December, 1927, 24; admitted during 1928, 324; discharged, 324; remaining in hospital on 31st December, 1928, 24; average daily number of occupied beds, 22. Annual cost of maintenance, £2,405. Average annual cost per bed, £109.

Denistone House is well situated, and an ideal climate for convalescents. Since the opening in 1915, there have been 4,255 patients under treatment.

Sufficient eggs, milk and vegetables are produced to meet requirements.

I. M. SHIELL,
Matron.

9.—WATERFALL SANATORIUM.

Report of the Medical Superintendent for the year ended 31st December, 1928.

Honorary Consulting Physicians.—Dr. Cecil Purser, Dr. E. W. Fairfax.

Resident Staff.—Medical Superintendent, Dr. H. W. Palmer; Senior Medical Officer, Dr. E. L. Fitzgerald; Junior Medical Officer, Dr. A. O. Mater; Manager, Mr. R. C. Rowe; Matron, Miss K. Walsh; 1 Sub-matron, 33 Nurses; Clerk and Storekeeper; 15 Male Attendants; 5 Cooks; 9 Artisans, &c.

Bed Accommodation.—There are 305 beds for males and 136 for females. Total, 441 beds.

Number of Patients Dealt with during 1928.—Number remaining in on 1st January, 1928, 409; admitted during 1928, 522; total number under treatment, 931; cases discharged, 427 (arrested cases, 29; much improved, 78; improved, 199; unimproved, 121); died, 127; remaining in the institution on 31st December, 1928, 377. Average daily number of beds occupied, 410. Total maintenance and cost, £42,914 16s. Average annual cost per patient, £104 13s. 4d. (compared with £96 4s. 9d. in 1927).

Condition on discharge and average residence in days of the 427 discharged patients—(average period of residence of all discharged patients was 318 days.)

Condition on Discharge.	No. of Patients.	Average Residence in days.
		Days.
Disease arrested	29	787
Much improved	78	357
Improved	199	211
Unimproved	121	360
Total	427	319

Condition of Patients on admission and discharge during 1928.

Condition on Admission.	Arrested.	Much Improved.	Improved.	Unimproved.	Died.	Total.
Incipient	9	9	8	3	1	30
Moderately Early	11	33	67	21	14	146
Advanced	9	35	120	95	85	344
Far Advanced	...	1	4	2	27	34

Arrested Cases.—Have no sign of active disease, normal temperature, no sputum, and able to do a fair amount of work.
Much Improved Cases.—Have slight signs of disease, normal temperature, may have slight sputum, but can do light work.
Improved Cases.—Have disease still active, but are generally better than on admission.
Unimproved Cases.—Have received no apparent benefit.

Ages of patients discharged or died during 1928.

Years, 1 to 9	Years, 10 to 19	Years, 20 to 29	Years, 30 to 39	Years, 40 to 49	Years, 50 to 59	Years, 60 to 69	Years, 70 to 79
5	28	144	122	120	84	41	10

OCCUPATIONS of Patients Discharged or Died during 1928.

Occupation.	Number.	Occupation.	Number.	Occupation.	Number.
Labourers	114	Clerks	23	Painters	8
Housewives	77	Factory hands	21	Stone workers	8
Home duties	50	Coal miners	18	Professions	8
Shop assistants	40	Children	16	Carters	8
Farm hands	26	Cooks	13	Hairdressers	7
Seamen	25	Firemen	10	Railway men	7
Building trades	25	Indoor trades	10	Tailoring	4
Mechanics	24	Pensioners	9	Postal employees	3

BIRTHPLACES of Patients Discharged or Died during 1928.

Country.	Number.	Country.	Number.
New South Wales	299	Wales	3
Other States of the Australian Commonwealth	60	British Dominions	21
England	90	European countries	22
Scotland	29	United States of America	4
Ireland	26		

TABLE of Yearly Results for ten years—1919 to 1928.

Total patients treated :—

Year.	Total Patients Treated.		Total Discharges.				Died.
	In Residence beginning of year.	Admitted during year.	Arrested.	Much Improved.	Improved.	Unimproved.	
1919 ...	349	439	59	77	102	17	177
1920 ...	356	480	77	80	112	41	150
1921 ...	376	556	59	107	147	67	190
1922 ...	362	548	63	111	102	114	164
1923 ...	356	569	42	78	159	83	167
1924 ...	396	598	43	70	203	90	192
1925 ...	396	587	47	115	195	31	158
1926 ...	437	548	53	69	212	32	187
1927 ...	432	537	22	109	223	33	173
1928 ...	409	522	29	78	199	121	127

GENERAL REVIEW OF THE YEAR'S WORK.

During the year there were 931 patients under treatment, namely, 641 males and 290 females. There were carried over from 1927 295 males and 114 female patients, and during the year 1928 346 male and 176 female patients were admitted; 314 males and 113 females were discharged; while 71 males and 56 females died. In residence on 31st December, 1928, 377 patients (256 males and 121 females).

Of the 427 patients discharged, 29 were arrested cases having no signs of active disease; 78 were much improved and able to return to ordinary light work; 199 were somewhat improved; while 121 were not benefited by their stay in the sanatorium.

Treatment was mainly along ordinary sanatorium lines, though tuberculin emulsion and sodium morrhuate were tried in several suitable cases. Colloid calcium and the triple salts of calcium were used in a number of cases, but had little curative value, nor did they appear to control hæmorrhagic cases. Hæmostatic serum also proved useless with this type of case.

Towards the end of the year we were provided with sufficient triradol to test its curative value on a small number of patients. As is the case with similar drugs, slight improvement may be noticed. A report of the cases treated with triradol is attached.

The results for 1928 compare favourably with those for the last ten years, though the number of unimproved cases has greatly increased. This is, no doubt, due to a number of advanced cases having been drafted to Coast Hospital Auxiliary at Randwick. This also explains the marked reduction in the number of deaths amongst male patients at the sanatorium.

As in the past, the treatment of children has again been very successful. The Boys' Ward, opened a little over a year ago, has made it possible to keep these patients from mingling with adult male patients. This has, no doubt, been of benefit to the children.

A separate ward for the girls, though not so much needed as in the case of boys, would be a great advantage. Under existing conditions, every effort is made to keep the children away from the adult female wards.

The children have their own schoolmistress, who looks after their education and supervises them at play.

During the year beds were made available at the Coast Hospital Auxiliary, Randwick, for advanced tuberculous cases, and during the latter half of the year 66 hopeless cases were transferred to that institution. So far, provision has been made for the transfer of male patients only. There is, however, great need for similar accommodation being made available for the very sick women. This, it is anticipated, will be provided during the coming year.

The Red Cross Southern Hospital, at Exeter, was made available for quiescent tuberculous cases on 12th July, and 6 cases were transferred there from Waterfall. The admission of further cases was held up for a time, nevertheless a total of 24 cases were transferred during the year. All these cases have been quiescent for long periods, and require little medical attention. As a result of their stay at Exeter, it is hoped that these patients will regain their spirit of independence, and after a short residence be fit to return to ordinary life as useful citizens.

The opening of the Picton Lakes Village Settlement is awaited with interest.

Requirements.—It is understood that action is to be taken in the coming year to provide for the most urgently needed of the requirements recommended by the Parliamentary Committee of Inquiry held in 1926, and which have not yet been supplied.

X-Ray Plant.—Funds have now been set apart for the provision of this necessary apparatus. The building to house the plant is to be erected in 1929.

New Buildings and Improvements.—An open-air carpenter's shop was erected for the use of the sufficiently-recovered patients, and at the end of the year was awaiting installation of necessary power machinery.

Special attention has been given to the kitchen and dining rooms, the renovation and painting of hospital buildings and wards, and the elimination of the fly nuisance.

New stables have been erected some distance from the hospital buildings, and the old stables demolished. The morgue is to be transferred to a more convenient position, and rearranged.

Amusements and Recreation.—As in previous years, the patients have been well catered for in both indoor and outdoor games. Besides the library, billiards and other indoor games, the cinema provides amusement every week, and our warmest thanks are due to the many friends of the institution and the visiting artists who have so frequently assisted in providing many enjoyable entertainments during the past twelve months.

The bowling green and croquet lawns have been largely made use of.

Bequest of the late Ellen M. Logan.—The late Miss Logan devised the residue of her estate in trust to be expended for the benefit of the women patients. While not binding the Trustee, she has expressed certain definite wishes, and these will be carried out as soon as possible.

Wireless Installation.—Although the wireless installation has never been capable of giving the service anticipated, still, by careful, continuous supervision, a fairly satisfactory service has been provided for the patients, and this has been fully appreciated.

Visiting Dentist.—The Dental Surgeon has visited the sanatorium fortnightly, being fully occupied one whole day attending to the dental requirements of the patients.

Vegetables Grown by Patients.—As in previous years, a number of patients, sufficiently recovered, were allotted garden plots, and all vegetables grown by them were purchased by the management at current market rates for use in the sanatorium. In all, 14 patients worked on these plots during the year, and raised vegetables to the value of £500.

Accommodation.—With the transfer of a number of male patients to the Coast Hospital Auxiliary, Randwick, and to Exeter, sufficient accommodation for all male cases applying for admission is now available. It is now possible to arrange for proper classification of the male patients admitted to the institution, and the difficulties of management have been reduced very considerably. The staff of attendants at present available on the male side of the institution is sufficient to carry out the work satisfactorily.

In the Women's Division, on the other hand, most of the beds continue to be occupied by hopeless cases, and the attendant staff is not sufficient to properly cope with the work. It often happens that when cases suitable for sanatorium treatment are admitted they will not stay, owing to the number of such depressing cases occupying the wards. It is very necessary that provision be made as early as possible for the accommodation of advanced female cases at Randwick on lines similar to those already arranged for male cases.

Appended is a report on five cases treated with "Triradol."

H. W. PALMER,
Medical Superintendent.

Report of Cases treated with Triradol.

Case 1.—B.D., aged 29 years, admitted 21st June, 1928, weight 8 st. 4 lb. Onset six months ago with pneumonia, persistent cough with copious sputum, frequent night sweats, appetite poor, morning vomiting, lost 8 lb. in weight. Always liable to asthma. O.E. well nourished, but anæmic, expansion fair, voice husky. Sputum—numerous tubercle bacilli. Chest dull, both apices, bronchial breathing L. apex, rough breathing R. apex, with numerous rhonchi at apices and R. base. Treatment—Two courses of triradol (each course being 1 cc. triradol injected intramuscularly daily).

Result : Patient has put on 15 lb. in weight, feels better, sputum decreased, but still contains tubercle bacilli, no night sweats, reflex, morning vomiting ceased, no asthma, general condition good.

Case 2.—R.F.A., aged 23, single, admitted 27th September, 1928, weight 9 st. 5½ lb., has lost 3 stone. Onset two years ago with hæmorrhage, which recurred at intervals. Severe cough for over a year, profuse sputum, tubercle bacilli numerous, night sweats often, poor appetite, very weak and dyspnœic for four months. O.E. condition good, well nourished, expansion even but restricted, chest dull at both apices with distant bronchial breathing, L. lung full of fine crepitations. Temperature, 100 F. at night. Patient had two courses of triradol. Result : Temperature normal, save for occasional rise, sputum much less, but tubercle bacilli still present, appetite good, night sweats absent, sleeps better, but is still dyspnœic and weak, and has lost 14 lb. in weight.

Case 3.—J.C.C., aged 27, admitted 29th September, 1927, weight 7 st. 9 lb., lost 7 lb. Onset twelve months ago with weakness and loss of appetite, cough ever since, with dyspnœa on exertion, sputum considerable and blood-stained, appetite poor. O.E. thin, flat chested, expansion poor. Chest dull, both upper lobes, amphoric breathing, third intercostal space anteriorly; dull and very weak breathing at base posteriorly, scattered creps. over both lungs. Sputum—tubercle bacilli numerous. Previous to triradol treatment he had had a course of sodium morrhuate and sanocrysin, but without benefit. Had two courses of triradol. Result : No change has been noted, chest condition extending, sputum still in evidence, generally weak and dyspnœic. Appetite only slightly improved.

Case 4.—W.H.H., aged 24, single, admitted 17th February, 1928, weight 8 st. 9 lb. Onset three years ago with cough, sputum, loss of appetite, increasing weakness, gets better, then falls away again, shortness of breath, slight hæmorrhages, little sputum. Previous history good. O.E. well nourished, expansion even and fair, chest dull, both upper lobes bronchial breathing, weaker posteriorly, full of creps., especially at front of R. base and L. base posteriorly. Sputum—tubercle bacilli very numerous. Patient had two courses of triradol treatment, has lost a few pounds in weight, sputum and tubercle bacilli unaltered, general condition not improved.

Case 5.—W.B., aged 25 years, admitted 4th August, 1928, weight 9 st. 4 lb. Onset three years ago with pleurisy; cough on and off gets better and then breaks down; gets very weak; sputum varies from little to several ounces; occasional blood stains. Previous illness nil. Sputum contained few tubercle bacilli. Patient only had one course of triradol, and then absconded. Sputum cleared up, and patient put on 7 lb. in weight, and his general condition improved. This was probably not due to the triradol treatment.

Triradol treatment consisted of triradol 1 cc., administered intramuscularly once a day for twenty-eight days, then a break of three or four weeks, when a second course of daily injection was given.

There were no constitutional disturbances, and no rise of temperature was noted (four cases being afebrile).

There is no local reaction, and in no case was pain complained of immediately or after. Urine was frequently examined and no abnormality detected. Practically all patients noticed a faint taste like "iodoform" ten to fifteen minutes after the injection and this lasted for some hours.

Slight improvement was noticed in two cases, and slight improvement but associated with considerable loss of weight in another, while two cases showed no improvement.

X-ray reports on these cases are not available.

10.—LIDCOMBE STATE HOSPITAL AND HOME FOR MEN.

Report of the Medical Superintendent for the year ended 31st December, 1928.

Honorary Visiting Staff.

Honorary Surgeon, Dr. H. C. Rutherford Darling, M.D., M.S., F.R.C.S.; Honorary Assistant Surgeon, Dr. J. A. Lawson, M.B., Ch.M.; Honorary Ear, Throat, and Nose Surgeon, W. A. Dunn, M.R.C.S., Eng.; Honorary Ophthalmic Surgeons, Falkner J. Blaxland, M.D.; A. L. North, M.B., Ch.M.; Honorary Neurologist, Andrew Davidson, M.D.; Honorary Dermatologist, A. Chapman, M.B., Ch.M.

Administrative Staff.

Medical Superintendent, R. A. Fox, M.B., Ch.M.; Senior Medical Officer, Dr. E. J. Brooks, M.B., Ch.M.; Junior Medical Officer, Dr. F. J. Williams, M.B., B.S.; Manager, R. J. Brown; Matron, Miss E. M. E. Mance.

Constitution of Hospital Staff on 31st December, 1928.

Medical Superintendent, two Resident Medical Officers, Dispenser, Manager, two Clerks, Matron, Sub-matron, forty-three Nurses, Chief Attendant, Chief Night Attendant, sixty-six Attendants, Ambulance Driver, Storekeeper, Assistant Storekeeper, two Engineers, Fitter, Foreman, two Carpenters, two Plumbers, Painter, Herdsman, two Out-door Attendants, three Cooks, Flower Gardener, Vegetable Gardener.

Number of Wards and Beds.

Hospital Division.		General Division.		Total Accommodation.	Number of Beds.
Ward No.	Number of Beds.	Dormitories.	Number of Beds.		
2	83	5	68		
3	72	6	71		
4	55	7	76	Hospital Division	978
A	61	8	70		
B	61	9	70		
C	61	10	68		
D	62	20	92		
E	27	Outside Locations.	42		
F	58				
G	61	Emergency Locations.	71		
H	43			General Division.................	628
I	50				
E.P.a.	109				
E.P.	113				
Block 21.	62				
15	978	7	628	Total	*1,606

* These numbers include 186 (Hospital Division, 96, General Division, 90) stretcher beds stalled in various wards and dormitories to meet urgent overcrowded demands.

Admissions and Discharges.

Remaining in on 1st January, 1928, 1493; admitted during 1928, 3,631; discharged, 3,121; died, 454; remaining in on 31st December, 1928, 1,509; Hospital Division, 883; dormitories, 626.

Average daily number of persons resident—1923, 1,487; 1924, 1,485; 1925, 1,485; 1926, 1,457; 1927, 1,490; 1928, 1,514.

Total cost of maintenance and treatment of patients and inmates for 1928, £89,443 15s. 11d. Average annual cost of patients and inmates, £59 1s. 6½d.

Work of Honorary Medical Officers.—We owe sincere thanks to the members of the Honorary Staff for their valuable assistance in the treatment of patients. Dr. Darling, the Senior Honorary Surgeon, visited the Hospital every week and helped us in our serious surgical difficulties.

In Dr. Lawson, our Hon. Assistant Surgeon, the surgical work of the Hospital has a very staunch and capable friend, always available, and one who has proved his value on countless occasions, mainly emergencies.

Dr. Chapman is an invaluable acquisition to the staff, helping us greatly in our dermatological problems. We are sorry to hear of his intended resignation, and wish to offer him our sincerest thanks for his help during his term of honorary work.

Our Ophthalmic Surgeons, Drs. Blaxland and North, have done excellent work during the year, and have spared themselves in neither time nor trouble in dealing with their cases. Dr. A. L. North, who had proved an extremely satisfactory *locum tenens* during Dr. Blaxland's absence earlier in the year, was appointed to fill the gap created by Dr. Brookes' retirement from the work.

The work of Dr. Dunn in the ear, nose, and throat cases, has been most helpful, and calls for grateful appreciation.

The following operations were carried out during the year :—Dr. Darling, 106; Dr. A. J. Lawson, 35; Dr. Blaxland, 44; Dr. North, 68; Dr. Dunn, 4; Dr. Furnival, 1.

The Resident Medical Staff performed 146 major and minor operations.

Massage Department.—Our Massage Department continues to do valuable service, the time of two members of the staff being almost fully taken up by this work. 466 patients were given treatment, with the following results :—Recovered, 152; relieved, 233; unrelieved, 38; under treatment at the end of the year, 43.

Recreation for the Inmates.—The cinema installed a few years ago has been the means of providing much pleasure. The apparatus is the property of the Institution, and by the generosity of the Universal Film Manufacturing Co. (Australasia) Ltd., in providing programmes free of cost, an entertainment has been given once a week throughout the year.

In addition to the above, first-rate concerts and other entertainments have been provided almost every Saturday night. The management and inmates are grateful to the many kind friends who have come, often at much inconvenience to themselves, to provide these entertainments.

Special thanks are due to the "Smith Family" for their annual distribution of Christmas Cheer, and for special gifts of gramophones for use in the wards.

Wireless.—Two sectional wireless installations have given much pleasure to the patients of the Divisions in which they are placed, viz., E.P and E.PA. (late Chest Ward). These installations were provided by the "Smith Family" and the Auburn Returned Soldiers' and Sailors' League respectively, and our grateful thanks are due to these organisations for their generosity. The question of a complete wireless installation for all the remaining hospital wards is now under consideration.

The billiard room and bowling green at the Chest Ward (now E.PA.) have afforded much pleasure to the patients during the year.

Diet.—In addition to providing diet in accordance with the approved scale, the medical lists have been sufficiently liberal to include the full requirements of all who were unable to partake of the scale allowance.

Accommodation.—The accommodation in all our hospital wards continued to be taxed to the uttermost throughout the year. In the middle of the year the tension was temporarily relieved by the transfer of the T.B. patients to Waterfall and Randwick, and the renovation and transformation of the "Chest" Ward to receive the surplus patients from E.P. and other wards; this enabled us to considerably reduce the number of emergency mattress beds on the floors of the wards.

The provision of new dining-rooms to nine of our hospital wards has been a most welcome addition and a great comfort to the patients of those wards. The removal of the dining tables from the ward verandahs has permitted the placing of extra bedsteads in the vacated spaces, thus further assisting in the elimination of the objectionable necessity of having to crowd in temporary mattress beds on the ward floors. The ever increasing applications for admission to our hospital wards makes it imperative that further accommodation by way of additional buildings be provided without delay.

In the dormitory section an equally crowded condition prevails. Additional stretcher beds have had to be improvised and placed in church, special diet room, shelter sheds and all available spaces to provide beds for those seeking the shelter of the institution. To relieve the strain, from time to time, special transfers of batches of men were made to George-street and Macquarie-street Homes, Parramatta. As nearly all beds were occupied at the end of the year, the outlook for the winter has become one of extreme gravity—additional dormitory buildings are urgently required to meet the ever-increasing demand.

OUT-DOOR SECTION.

Farm and Dairy.—An area of approximately 30 acres is constantly under cultivation for the purposes of providing green fodder for the dairy herd. During the year 85 tons of various green crops were provided.

The cows yielded 67,239 gallons of milk, which met increased requirements of the institution. This compares with 62,043 gallons in 1927.

In the dairy herd the Friesian class predominates, the quality of these animals being demonstrated by the number of prizes and awards secured by them at the Royal Agricultural Society's Show in this and previous years. Continued efforts are being made to build up the standard of milk production, and the results from the young stock passed into the milking stage have been most gratifying. The health of the herd continues good, the result of the latest tuberculin tests being 100 per cent. sound.

In October, 1926, the forage sheds at the dairy were totally destroyed by fire and the loss was severely felt until toward the end of 1928, when a new and larger reinforced concrete barn, built by the Works Department, was made available for storage purposes. The extension of the steam services to the new building has yet to be made, and, when this has been completed, the new construction will be a valuable asset to our dairy.

Vegetable Garden.—The appointment of a skilled vegetable gardener to give full time to this work was finalised in September, 1928, and the preparatory work of the new appointee, up to the end of the year, foreshadows good results in the coming years.

Piggery.—The improvement shown in 1927 returns compared with 1926 continued in a greater degree in 1928, the profits from the industry showing £1,448 7s. 5d., as against £605 for 1927. We were fortunate in still being able to keep our sties free from the prevalent swine fever epidemic, which wiped out so many of the piggeries in Cumberland. Much constructional work in extending yards and sub-dividing paddocks, &c., still remains to be done in the new piggery.

R. A. FOX,
Medical Superintendent.

R. J. BROWN,
Manager.

*2179—K

11.—LIVERPOOL STATE HOSPITAL AND HOME FOR MEN.

Report of Medical Superintendent for year ended 31st December, 1928.

Honorary Visiting Staff.—Honorary Ear, Nose, and Throat Surgeon, Hon. Richard Arthur, M.D., M.L.A.*; Arthur Lynton Clowes, M.B., Ch.M., Syd., F.R.C.S. Edin., from 5th April, 1928; Honorary Dermatologist, W. A. McDonald, B.A., M.B., Ch.M.; Honorary Medical Officer, J. Pirie, L.R.C.P., L.R.C.S., Edin., L.R.C.P.S., Glas.

Staff.—Medical Superintendent, Donald Wallace, M.A., M.B., Ch.M.; Junior Medical Officer, C. R. O'Brien, M.B., Ch.M.; Manager, J. J. Ranshaw; Matron, L. W. McIntosh.

Constitution of Hospital Staff on 31st December, 1928.—Medical Superintendent, Junior Medical Officer, Manager, Matron, Sub-matron, 10 Nurses, Clerk, Storekeeper, Dispenser, Engineer, Foreman, Carpenter, Plumber, Painter, Gardener, Chief Attendant, 20 Attendants, Baker, and 2 Cooks.

Number of Wards and Beds.

Hospital Division.		General Division.		Total Accommodation.
Wards.	Beds.	Dormitories.	Beds.	
13	287	13	426	713 beds.†

† This total does not include 19 inmate workers' beds located in outbuildings.

Admissions and Discharges for Year ended 31st December, 1928.

Number of persons in residence on 1st January, 1928, 764; admitted, 2,411; total, 3,175; discharged, 2,217; died, 188; in residence on 31st December, 1928, 770; average daily number, 743. Total cost of maintenance and treatment, £37,855 5s. 6d. Average annual cost per inmate, £50 19s.

Summary of Patients treated in the various Wards during 1928.

Hospital Section.	In Hospital, 1st January, 1928.	Admitted during year.	Discharged during year.	Died during year.	In Hospital, 31st December, 1928.
Cancer Wards	32	89	29	63	29
Venereal ,,	45	208	253	...	...
General ,,	182	686	549	100	219
Totals	259	983	831	163	248
District Ward	18	204	183	25	14
Grand Total	277	1,187	1,014	188	262

Out-Patients.—The number of district patients seeking relief in the out-door department shows an increase—428—on last year's figures. There were recorded 5,352 attendances, including 1,623 dressings and operations in the district ward. The valuable services of the Honorary Medical Officer (Dr. Pirie) have been available from time to time as required.

Venereal Wards.—These wards were closed for the treatment of venereal cases during the month of June and after renovation were reopened for the treatment of general cases. Up to the date of closing Dr. McDonald, Honorary Dermatologist, paid regular visits at intervals of two weeks, but subsequently discontinued his visits.

Inmate Accommodation.—The number of inmates in August attained the grand total of 791, which exceeds by 27 the highest record of any previous year. The accommodation in the home section was considerably overtaxed on several occasions during the year, necessitating the provision of emergency beds on the verandahs and in the corridors.

Hospital Wards.—The general hospital accommodation was again fully utilised. The work of installing a hot and cold water service with sterilisers, sinks and basins in the various wards was commenced by the Public Works Department and at the close of the year was nearing completion.

Recreation for Inmates.—In addition to the regular entertainments provided by "Wireless," concerts have been arranged at frequent intervals by persons interested in the institution. Special mention should be made of the visit of the "Smith Family" at Christmas time when, in addition to entertaining the inmates, gifts of books, gramaphone records and playing cards were made to the institution.

Farm and Dairy.—The need for green and uncooked vegetables and fresh milk as a corrective of the regulation institutional diet has been kept in view in directing the operations of the vegetable garden and dairy.

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* Resigned, March, 1928.

URGENT IMPROVEMENTS REQUIRED.

District Ward.—The urgent need for supplying this ward with suitable lavatory accommodation, bathrooms, &c., is again strongly emphasised.

Accommodation for Nursing Staff.—The question of the erection of quarters for the matron and nursing staff is still in abeyance. It is regretted that this matter has not been finalised as no institution can function as an up-to-date hospital without a resident nursing staff.

Residence for Manager.—The question of erecting a residence for the manager within the grounds of the institution is at present under consideration. This provision is essential to efficiency in administration, and the matter is therefore regarded as urgent.

D. WALLACE,
Medical Superintendent.

Manager's Review of the Out-door Work for the year ended 31*st December,* 1928.

The supply of inmate labour was fairly well maintained throughout the year and satisfactory progress was made with the out-door work.

Dairy Farm.—The quantity of milk produced was 28,035 gallons. The appointment of a herdsman to this section, which has not yet been made, is still an urgent necessity.

Piggery.—Progress has been made with the restocking of the piggery after the outbreak of swine fever. The sales during the year amounted to £160 7s. 4d.

Farm, Vegetable Garden, and Orchard.—Owing to adverse weather conditions there was a reduction in the output in this section. The yield of vegetables was 57,468 lbs.; fruit, 4,397 lb.; and green feed, 44 tons 5 cwt.

Bakery.—The usual high standard of quality was maintained. The total bread consumption was 232,450 lb.; buns, 208 doz.; cake, 20,800 lb.

Condition of Buildings.—All institution buildings were maintained in a reasonable state of efficiency.

Garden and Grounds.—The condition of the gardens and grounds has been well maintained throughout the year.

J. J. RANSHAW,
Manager.

12.—NEWINGTON STATE HOSPITAL AND HOME FOR WOMEN.

Annual Report for the year ended 31st December, 1928.

Honorary Medical Staff.—Hon. Surgeon, Walter A. Ramsay Sharpe, M.B., M.S., F.R.C.S., Edin.; Hon. Ophthalmic Surgeon, Dr. L. Stanton-Cook; Hon. Ear, Throat and Nose Surgeon, Herbert Huff Johnston, M.D.; Hon. Neurologist, Andrew Davidson, M.D.

Staff.—Visiting Medical Officer, Francis H. Furnival, M.R.C.S., Eng.; L.S.A., Lond.; Resident Medical Officer, Lottie Sharfstein, M.B.; Manager, William Megarvey; Matron, Emily Wood; Sub-Matron; Clerk and Storekeeper; Clerk; Dispenser; 40 Nurses, Housekeeper, Seamstress, Cook, 2 Housemaids, Carpenter, Plumber, Painter, Herdsman, Gardener, Night Patrol, 2 Engineers, Fireman, Foreman, Outdoor Attendant. Dentist visits weekly.

Admissions and Discharges.—Number of inmates on 1st January, 1928, 669; admitted during the year, 1,228; discharged, 1,037; died, 196; remaining on 31st December, 1928, 654. Average daily number resident, 674. Total cost of maintenance and treatment of patients, £32,252 18s. 2d. Average cost per inmate, £47 11s. 8d.

Number of Wards and Beds.—Hospital Division—Number of wards, 14; beds, 422. Yard Division—Number of dormitories, 8; beds, 306.

Hospital Division Summary.—Patients in hospital 1st January, 1928, 316; admitted during the year, 820; discharged, 816; recovered, 235; relieved, 333; unrelieved, 48; died, 200.

Classification of Diseases Treated.—General diseases, 153; alimentary, 46; circulatory, 112; respiratory, 108; genito-urinary, 33; nervous, 96; osseous and arthritic, 7; skin and glands, 112; wounds, fractures, &c., 43; miscellaneous, 48; senility, 85.

REVIEW OF YEAR'S WORK.

There have been no alterations in the honorary or executive staff during the year.

Plans have been prepared by the Public Works Department for nurses' quarters, additions to D ward and a shelter shed for women in the dormitory section, and tenders are to be called for their erection.

The floors of the kitchen block have been renewed, and the building has been painted and renovated throughout.

The eight dormitories and other hospital buildings have been painted, and a kitchen and dining room have been added to F ward; alterations and additions have been made to the bath rooms and lavatories in the hospital buildings.

Rations have been increased; and enamel ware has been replaced with crockery ware throughout.

The transfer of the supply of electricity, hitherto generated locally, to the City Council mains should result in a substantial saving in the cost of the service.

Reconditioning of Sutherland-street from the Parramatta-road to the institution, commenced some time ago by Auburn and Lidcombe Councils with the aid of a Government subsidy, has been completed.

Entertainment of Patients and Inmates.—The patients have been well catered for in regard to entertainment by concert parties who have been good enough to visit the institution on many occasions throughout the year.

Special thanks are due to Australian Films, Ltd., for providing films each fortnight free of charge, and to Messrs. Rowe and Williams who have for many years supplied and operated their own cinema.

Special thanks are also tendered to the "Smith Family" who continue their regular visits during the year, and at Christmas time distribute cakes and fruit and present books to the patients.

Farm and Dairy Operations.—Vegetables produced, 4,787 lb.; milk, 90,293 gallons. Revenue collections for the year amounted to £1,760, comprising sale of pigs, £425, cows, calves, &c., £208 18s. 9d.; tallow, £137 5s. 0d.

W. MEGARVEY,
Manager.

13.—STATE HOME FOR AGED AND INFIRM MEN, GEORGE-STREET, PARRAMATTA.

Report of the Officer-in-Charge for the year ended 31st December, 1928.

Staff.

Visiting Medical Officer—Dr. W. S. Brown.

Officer-in-Charge, G. M. Strange. Attendants, 5.

Number of beds in hospital, 39; in dormitories, 307; total, 346.

Admissions and Discharges.—Remaining in on 31st December, 1927, 286; admitted during year, 1,940; discharged, 1,953; died, 10; remaining in on 31st December, 1928, 263; average daily population, 262; total cost of maintenance, 1928, £9,256 14s. 11d.; average cost per inmate, £35 6s. 7d.

Number in hospital on 31st December, 1927, 24; admitted during year, 62; discharged, 56; died, 10; remaining in hospital, 31st December, 1928, 20; number of visits by Visiting Medical Officer, 247; inmates seen, 2,335, of whom 232 were transferred to other institutions.

General.—A proportion of inmates' clothing, bedding, &c., is made on the premises by inmate labour. All carpentry works, repairs to buildings, painting, bricklaying, &c., are carried out under the supervision of the Officer-in-Charge by inmate labour.

Recreations and Amusements.—Inmates have been entertained by various concert parties during the year.

Fifty inmates were given tea at the Methodist Church, Parramatta, on the 19th December, 1928.

The Salvation Army visited the institution at Christmas and distributed gifts to the inmates.

The "Smith Family" gave cake and fruits at Christmas time and presented books to the library.

G. M. STRANGE,
Officer-in-Charge.

14.—STATE HOME FOR THE BLIND AND MEN OF DEFECTIVE SIGHT AND SENILITY, MACQUARIE-STREET, PARRAMATTA.

Staff.

Visiting Medical Officer	Dr. W. S. Brown.
Officer-in-Charge	Mr. H. A. Pyne.

Total Number of Beds.—228.

Admissions and Discharges.—Remaining in on 31st December, 1927, 182; admitted during 1928, 1,041; total, 1,223; remaining in on 31st December, 1928, 205; daily average number resident, 212; total cost of maintenance and treatment of inmates, £7,129 19s. 3d.; average cost per inmate, £33 12s. 7d.

Dental Work is carried out by a qualified dentist who visits monthly.

Bakery.—Bread and currant cake were made in the Home, the output totalling 1,045,464 lb. of bread, and 53,005 lb. of cake, the whole of which was distributed to the State Hospitals at Waterfall, Lidcombe and Newington, and the George-street and Macquarie-street Homes; 780 dozen buns were also distributed at Easter to the above institutions.

General.—Inmates' clothing, bedding, &c., with the exception of boots and hats, are made in the Home by inmate labour. All carpentry works, repairs to buildings, painting, bricklaying, &c., are carried out by the inmates under the supervision of the Officer-in-Charge. A new hot water service to baths was installed under supervision of the Public Works Department.

The visiting Medical Officer attended on 300 occasions.

H. A. PYNE,
Officer-in-Charge.

15.—STATISTICAL SUMMARY.

TABLE I.—Summarised Statement of Expenditure:—Montrose Maternity Hospital, Fernleigh Rest Home, Lady Edeline Hospital for Babies, and Carrara and Denistone Convalescent Homes for the year ended 31st December, 1928.

Head of Expenditure.	Montrose Maternity Hospital.	Fernleigh Rest Home.	Lady Edeline Hospital for Babies.	Carrara Convalescent Hospital.	Denistone Convalescent Hospital.	Totals.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Salaries	1,082 0 0	819 0 0	1,159 0 0	998 0 0	903 0 0	4,961 0 0
Gratuities	30 0 0	19 0 0	200 0 0	203 0 0	199 0 0	651 0 0
Provisions	462 0 0	376 0 0	969 0 0	910 0 0	774 0 0	3,491 0 0
Insurance	4 0 0	3 0 0	9 0 0	4 0 0	5 0 0	25 0 0
Telephone	21 0 0	12 0 0	29 0 0	17 0 0	20 0 0	99 0 0
Stimulants Drugs Disinfectants	19 0 0	2 0 0	73 0 0	16 0 0	19 0 0	129 0 0
Fuel	60 0 0	20 0 0	155 0 0	75 0 0	64 0 0	374 0 0
Light	51 0 0	49 0 0	116 0 0	60 0 0	68 0 0	344 0 0
Hardware	42 0 0	10 0 0	10 0 0	16 0 0	62 0 0	140 0 0
Clothing, &c.	22 0 0	10 0 0	14 0 0	35 0 0	28 0 0	109 0 0
Cows and horses	....	....	....	....	....	....
Travelling expenses, &c.	6 0 0	4 0 0	16 0 0	6 0 0	35 0 0	67 0 0
Repairs, &c.	14 0 0	17 0 0	26 0 0	28 0 0	22 0 0	107 0 0
Postage	3 0 0	2 0 0	2 0 0	2 0 0	5 0 0	14 0 0
Forage	6 0 0	5 0 0	....	186 0 0	147 0 0	344 0 0
Sundries	25 0 0	8 0 0	82 0 0	122 0 0	54 0 0	291 0 0
Total	1,847 0 0	1,356 0 0	2,860 0 0	2,678 0 0	2,405 0 0	11,146 0 0
Average daily number of patients	8	9	28	33	22	100
Average cost per occupied bed £	231 0 0	151 0 0	102 0 0	81 0 0	109 0 0	111 0 0

15. STATISTICAL SUMMARY—(*Continued.*)

TABLE II.—SUMMARY STATEMENT of Expenditure, State Hospital and Homes of Lidcombe, Liverpool, and Newington, Parramatta Homes (George Street and Macquarie Street), and Waterfall Sanitorium, for the year ended 31st December, 1928.

Head of Expenditure.	Lidcombe.	Liverpool.	Newington.	Waterfall Sanatorium.	Parramatta.		Total.
					Macquarie-street.	George-street.	
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ . d.
Salaries, Wages, and Gratuities (including expenses of Administration)	37,536 7 4	18,128 11 4	12,695 11 4	18,354 6 4	2,407 5 10	3,024 2 8	92,146 4 10
Provisions	28,384 7 8	11,595 16 2	10,142 0 9	17,374 16 7	3,373 2 7	4,560 19 3	75,431 3 0
Alcohol	243 4 1	248 14 3	50 1 3	30 15 0	....	8 1 6	580 16 1
Drugs, Dressings, Disinfectants and Surgical Appliances	3,813 11 4	1,234 11 5	1,123 8 8	686 16 4	173 16 4	180 17 4	7,213 1 5
Fuel and Lighting	3,117 2 8	1,281 7 3	2,175 11 8	1,544 17 4	351 1 9	316 5 6	8,786 6 2
Water	....	....	827 11 2	757 15 2	32 18 8	40 12 6	1,658 17 6
Burials (including ground fees)	222 10 5	159 6 6	21 10 0	11 0 0	....	11 15 0	426 1 11
Hardware	3,094 13 4	334 5 2	442 2 10	454 13 3	149 0 8	87 16 3	4,562 11 6
Clothing, Linen, Blankets, &c.	6,883 4 2	2,488 5 0	2,434 19 6	1,969 3 10	293 7 6	800 17 8	14,869 17 8
Fodder	3,955 7 11	1,420 4 6	1,882 19 1	302 6 9	....	41 3 6	7,602 1 9
Live Stock	....	395 16 6	....	....	....	....	395 16 6
Furniture and Fittings	983 14 6	39 11 11	718 5 11	1,077 16 4	5 10 7	....	2,824 19 3
Railway Expenses	513 8 2	514 1 1	9 15 10	250 0 9	24 2 11	139 0 8	1,450 9 5
Repairs and Maintenance of Buildings	884 15 10	755 2 3	282 12 1	438 17 3	42 12 4	119 0 10	2,523 0 7
Printing, Stationery, and Postage	205 8 5	50 1 6	22 17 1	35 1 7	15 15 0	24 0 2	353 3 9
Sundries	863 17 7	455 11 9	585 16 2	145 3 3	84 11 2	14 19 6	2,149 19 5
Total	90,701 13 5	39,101 6 7	33,415 3 4	43,433 9 9	6,953 5 4	9,369 12 4	222,974 10 9
Stock on hand 31st December, 1927	8,314 13 6	3,957 18 6	2,494 4 7	3,070 10 10	1,100 14 5	815 9 0	19,753 10 10
Grand Total	99,016 6 11	43,059 5 1	35,909 7 11	46,504 0 7	8,053 19 9	10,185 1 4	242,728 1 7
Deduct—							
Stock on hand 31st December, 1928	9,284 5 1	4,711 2 5	2,673 19 10	3,203 6 10	847 3 10	837 17 9	21,557 15 9
Proceeds of Sales, etc.	1,972 10 10	492 17 2	971 3 5	385 17 9	76 16 8	90 8 8	3,989 14 6
Total Deductions	11,256 15 11	5,203 19 7	3,645 3 3	3,589 4 7	924 0 6	928 6 5	25,547 10 3
Total Cost	87,759 11 0	37,855 5 6	32,264 4 8	42,914 16 0	7,129 19 3	9,256 14 11	217,180 11 4
Average daily population	1,514	743	674	546	212	262	3,951
Average annual cost per inmate £	57 19 4	50 19 0	47 17 4	78 11 11	33 12 7	35 6 7	54 19 4
Annual contributions towards maintenance £	8,738 0 10	3,405 3 7	5,420 0 0	3,418 0 8	1,363 17 6	767 4 7	23,112 7 2

SECTION IV.

Report of the Microbiological Laboratory for the Year 1928.

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SECTION IV.

Microbiological Laboratory.

Report of the Principal Microbiologist to The Director-General of Public Health for the Year ended 31st December, 1928.

Staff.

Principal Microbiologist.—Ernest Leslie Morgan, M.B., Ch.M.

Assistant Microbiologists.—Elsie Jean Dalyell, M.B.; Marie Montgomerie Hamilton, M.B., Ch.M.; Robert Grant, F.C.S.; Muriel Constance Letchford, B.Sc.

Senior Laboratory Assistant.—John Owen Sergeant. Laboratory Assistants, 6; Junior Assistants, 2; Attendants, 4.

Clerk and Librarian.—Florence Stewart Wearne. Shorthand-writers and Typists, 3; Temporary Messenger, 1.

Sir,

I have the honor to submit the accompanying report dealing with the work performed in the Microbiological Laboratory during 1928.

There has been a steady increase in the volume of work. The examinations in 1928 numbered 42,677, being 6,119 more than in 1927, or an increase of 15 per cent.

Plague.—No case of human or animal plague occurred. As usual during long periods of freedom from plague the number of rats submitted for examination decreased, the figures being 5,976 in 1928, compared with 7,437 in 1927. In 1922, when plague was present in Sydney, the rat examinations totalled over 30,000.

Rat Leprosy.—During the year a rat suffering from rat leprosy was submitted for examination. A reference was made in the Annual Report for 1927 to the seven previously recorded instances in which the disease had been recorded in Sydney rats.

Tuberculosis.—There were 3,851 examinations of sputa and other material for the presence of tubercle bacilli, compared with 3,100 in 1927, which at that time was the greatest number examined in one year. The very considerable increase has probably resulted from the activities of the newly appointed Director of Tuberculosis in connection with the systematic examination of contacts of notified cases of tuberculosis.

Diphtheria.—There was a slight increase in the number of swabbings examined (4,429) as compared with 4,398 in 1927, notwithstanding a slight decline in the number of notified cases (4,059 in 1927 and 3,835 in 1928).

Scarlet Fever.—While scarlet fever has been prevalent throughout 1928, the outbreak has been fairly general and no opportunity has presented itself for the Department to undertake prophylaxis.

Typhoid Fever.—Although the number of cases of typhoid fever notified during 1928 (153) is the lowest on record since the introduction of notification in 1898, there was an increase in the number of Widal reactions and examinations for typhoid bacilli from 474 in 1927 to 604 in 1928.

Venereal Diseases—Syphilis.—The serological tests for syphilis include both Wassermann reaction and Kahn test, and the combined increase in these tests is 4,523. 9,072 Wassermann reactions and 8,380 Kahn tests were performed, as against 7,300 Wassermann reactions and 5,620 Kahn tests in 1927.

Gonorrhœa.—In both smears and complement deviation tests the figures show a decided increase, namely, 4,660 smears were examined during the year, as against 3,928 in 1927; and 3,811 complement deviation tests were performed, as against 2,726 for the previous year.

The 21,263 examinations were carried out this year on 9,111 specimens, as compared with 15,655 examinations on 7,306 specimens in 1927.

Ecto-parasites.—Examination of ecto-parasites from rodents has been undertaken continuously since the first outbreak of plague in 1900. The chart record begun in 1909 this year completes a twenty years' survey, and it is not proposed to continue its publication.

Milk Examinations for Tubercle Bacilli and Bacterial Content.—The testing of milk from suburban dairies for tubercle bacilli was continued. The results are summarised on p. 126. The possibility of a lesion which developed in a guinea-pig inoculated from one of the samples being due to *Brucella abortus* is under investigation.

Staff Changes.

Dr. I. M. Mackerras, who joined the staff as Assistant Microbiologist in January, 1927, resigned in December, 1928, to take a post on the staff of the Commonwealth Council for Scientific and Industrial Research.

Miss E. C. Pinkerton, Biochemist, also resigned in December.

Mr. Wilfred Charles Thompson was appointed as Temporary Laboratory Assistant in March, and Alan Thomas McDonald as Junior Assistant in August.

Death of Austin Burton Duffy, Senior Laboratory Assistant.

It is with deep regret I record the death of Austin Burton Duffy, who joined the staff of the Microbiological Laboratory in 1899, after some years' service in the Postal Department.

Through ability, diligence and close application to work, Mr. Duffy rose to the position of Senior Assistant. His services proved of great value in the epidemics of plague, smallpox and influenza, and in 1907 he assisted in the experiments on rabbits at Broughton Island. Mr. Duffy was of a kindly disposition, cheerful and ever ready to help his colleagues, and his loss will be severely felt by all who worked with him.

E. L. MORGAN,
Principal Microbiologist.

Part I.—Table showing the Routine Examinations made for the Various Branches of the State Department of Public Health, other Government Departments, Subsidised Hospitals, &c.

	Number of Examinations. Comparative Statement.	
Department of Public Health—	1927.	1928.
Head Office, Director-General	2,402	1,462
Coast Hospital	3,186	3,967
,, ,, (Night Clinic)	1,678	1,486
David Berry Hospital, Berry	57	59
Lady Edeline Hospital for Babies	6	3
Lidcombe State Hospital and Home	792	821
Liverpool State Hospital and Home	1,369	979
Newington State Hospital and Home	160	208
Strickland Convalescent Home	4	9
Waterfall Sanatorium	4	2
Medical Officer of Health, Newcastle	32	20
Commonwealth Government	266	463
State Departments—		
Agriculture and Stock	2	1
Chief Secretary (Fisheries)	1	8
Child Welfare Department	....	2
Education Department	43	77
Government Stores Department	36	25
Hunter District Water and Sewerage Board	....	30
Metropolitan Meat Board	....	1
Police Department	63	50
Prisons (Long Bay Gaol, &c.)	862	600
Public Works Department	96	31
Railways and Tramways Department	10	15
State Insurance Office	6	4
Water Conservation and Irrigation Commission	....	1
Workers' Compensation Commission	17	35
Private Practioners	18,642	23,323
Public Hospitals and Institutions other than State Hospitals	6,801	8,932
Municipal and Shire Councils	23	63
	36,558	42,677

	1927.	1928.
Total Examinations—		
General	36,558	42,677
Rats for Plague	7,437	5,976
Grand Total	43,995	48,653

In the following Statement the Routine Work is divided into sections to disclose the purposes for which the various examinations were made :—

A.—*Microbiological Examinations.*	Number of Examinations. Comparative Statement.	
1. Of materials from diseased persons and animals—	1927.	1928.
Actinomycosis	9	16
Bilharzia	2	2
Dengue fever	1	......
Diphtheria (swabbings)	4,398	4,429
,, (toxicity)	228	225
,, (Schick tests)	......	23
Dysentery	7	1
Favus (Mouse)	......	2
Filaria	1	8
Gonorrhœa (smears and urine)	3,928	4,669
,, (complement deviation test)	2,726	3,811
Hydatids (sputa, smears, &c.)	45	26
,, (complement deviation test)	20	61
Leprosy (human)	16	3
,, (rat)	1	1
Malaria	22	22
Meningitis	96	97
Mastitis (bovine)	5	12
Plague (human)	1	......
Scarlet fever	1	......
Syphilis (Wassermann reactions)	7,300	9,072
,, (Kahn's flocculation test)	5,629	8,380
,, (Spirochætes)	16	36
Tetanus	1	......
Tinea	11	15
Tuberculosis (human)	3,100	3,847
,, (bovine)	......	4
Typhoid (Widal reactions)	474	604
,, (urine and fæces)	238	310
,, (miscellaneous, waters, milks, &c.)	8	......
,, (urine and fæces, special examinations at Goulburn Gaol).	592	......
Unclassified, " No growths " from pus, &c.	1,049	1,197
Typhus	1	4
Vincent's Angina	37	46
Whooping cough	2	......
	29,965	36,923

	Number of Examinations. Comparative Statement.			
	1927.		1928.	
Brought forward	29,965		36,923	
A.—*Microbiological Examinations*—continued—				
2. Examinations for Anthrax—				
Human beings	6		2	
Shaving brushes	3		......	
Animals (sheep, cattle, &c.)	2	11	......	2
3. Of Materials, &c.—				
Disinfectants	40		37	
Barbers' utensils	1		......	
Chemical closets	2		4	
Rag flock	2		17	
Sewage, effluents, &c.	1		27	
Water	176		143	
Soil	......	222	7	235
4. Examinations of Foods for bacterial contamination—				
Bread	3		......	
Butter	......		1	
Cheese	1		......	
Corned Beef	......		6	
Cream	4		2	
Dripping	1		......	
Flour	1		......	
Milk—				
Special bacterial counts, Sydney Milk Supply, including examination for tubercle bacilli	220		142	
Miscellaneous milks for bacterial counts, &c.	19		66	
Testing keeping qualities of bottled milk	35		......	
Nuts	1		......	
Oysters	......		6	
Starch	2		......	
Tomato paste	1		......	
Tomato pulp	......		5	
Yeast	2	290	......	228
5. Examinations for Food Poisoning	13	13	2	2
B.—*Pathological Examinations.*				
1. Of Animals—				
Mammals	15		8	
Birds	4		1	
Fish	1	20	1	10
2. Of Body Fluids—				
Blood for full and differential count	378		499	
Blood for blood typing	2		20	
Blood coagulation of time	......		2	
Chemical Examinations—				
Bloods for sugar	356		312	
,, urea	137		181	
,, ,, and creatinin	35		20	
Urines for sugar	187		71	
,, urea	186		179	
Miscellaneous	10		18	
Urine (general examinations)	920		966	
Fæces	53		59	
Test meal	21		43	
Calculus	6	2,291	......	2,370
3. Of Tissues—				
Malignant tumours	415		427	
Leprotic	......		1	
Tubercular	16		23	
Other conditions	949	1,380	947	1,398
C.—*Examinations of Parasites.*				
Ecto-parasites (fleas, ticks, &c.)	1,459		618	
Endo-parasites (round and flat worms)	7		10	
Insects (including flies and mosquitoes) and spiders	19	1,485	82	710
D.—*Medico-Legal Examinations.*				
Examination of Exhibits for—				
Blood stains	20		7	
Gonococci	7		6	
Seminal stains	37		39	
Spermatozoa	16		17	
Other examinations	4		3	
Poison tests	1	85	3	75
E.—*Examination of Specimens for Preparation of Vaccines.*				
Preparation of Autogenous Vaccines from sputa, urine, acne pustules, boils, wounds, and other septic conditions	676		700	
Special Investigation—				
Seasonal prevalence of flies	120	796	24	724
Total	36,558		42,677	

PART II.—REPORTS OF INVESTIGATIONAL WORK, 1928.

1.—ROUTINE EXAMINATION OF RODENTS AND THEIR ECTOPARASITES.

(I. M. Mackerras and Robert Grant.)

The routine examination of rats for the presence of plague was continued. These examinations have been carried out with two short breaks since 1900.

No infected animals were found in the 5,976 rats and mice examined during 1928. There has been a steady decrease in the number of rats caught and examined since 1922, when plague was present in Sydney.

Species of Fleas.—A total of 618 fleas was collected for the eight months January to August, and were determined as belonging to four species, namely :—*Xenopsylla cheopis* (280), *Leptopsylla musculi* (243), *Ceratophyllus fasciatus* (89), *Ctenocephalus felis* (or *canis*) (6).

Fleas Collected from Rodents Examined in the Microbiological Laboratory, 1909–1928.—A statement is included (Table III) showing the number and percentage species of fleas collected from rats and mice examined in the laboratory from 1909–1928. As the graph now covers a twenty years' survey it is not proposed to publish it again.

Table I.—Showing the number and species of Rats examined each week, and the number and species of Fleas collected on them.

1928. Week ended—	Species of Rats Examined.				No. with Plague.	Species of Fleas and Hosts on which they were found.																Total No. of Fleas Collected.
						Xenopsylla cheopis.				*Ctenopsylla musculi.*				*Ceratophyllus fasciatus.*				*Ctenocephalus felis or canis.*				
	R. norvegicus	*R. rattus.*	*M. musculus.*	Total.		*R. norvegicus.*	*R. rattus.*	*M. musculus.*	Total.	*R. norvegicus.*	*R. rattus.*	*M. musculus.*	Total.	*R. norvegicus.*	*R. rattus.*	*M. musculus.*	Total.	*R. norvegicus.*	*R. rattus.*	*M. musculus.*	Total.	
6 January	4	28	1	33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13 ,,	26	100	13	139	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20 ,,	16	61	13	90	...	5	20	...	25	1	15	...	16	2	1	...	3	...	...	...	...	44
27 ,,	8	66	12	86	...	2	13	...	15	1	7	...	8	2	1	...	3	...	...	...	...	26
3 February	17	80	16	113	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10 ,,	4	80	12	105	...	12	9	...	21	1	9	...	10	...	6	...	6	...	...	...	...	37
17 ,,	17	117	5	139	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24 ,,	15	107	18	140	...	3	20	...	23	1	6	...	7	2	2	...	4	...	...	...	...	34
2 March	15	103	16	134	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9 ,,	15	108	8	131	...	...	6	...	6	...	1	...	1	...	2	...	2	...	...	...	...	9
16 ,,	42	146	16	204	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23 ,,	13	95	14	122	...	2	50	...	52	2	12	...	14	...	7	...	7	...	...	...	...	73
20 ,,	21	78	16	115	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6 April	15	62	12	89	...	6	21	...	27	2	7	...	9	2	2	...	4	...	1	...	1	41
13 ,,	17	33	3	53	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20 ,,	27	67	9	103	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27 ,,	35	65	10	110	...	5	5	...	10	3	4	...	7	3	7	...	10	...	...	...	...	27
4 May	20	96	10	126	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11 ,,	16	78	19	113	...	17	4	...	21	9	7	...	16	1	3	...	4	...	...	...	...	41
18 ,,	32	101	34	167	...	3	10	...	13	4	29	...	33	7	2	...	9	...	...	...	...	55
25 ,,	25	86	28	139	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1 June	9	173	14	196	...	1	14	...	15	8	35	...	43	6	8	...	14	...	1	...	1	73
8 ,,	16	90	22	128	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15 ,,	9	73	35	117	...	13	20	...	33	6	21	...	27	1	...	...	1	...	3	...	3	64
22 ,,	20	103	31	154	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29 ,,	36	77	15	128	...	...	1	...	1	4	2	...	6	3	6	...	9	...	...	...	...	16
6 July	15	86	39	140	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13 ,,	12	92	12	116	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20 ,,	14	45	15	74	...	...	6	...	6	3	12	...	15	2	6	...	8	1	...	...	1	30
27 ,,	14	79	22	115	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3 August	13	62	8	83	...	3	1	...	4	14	5	...	19		..		...	...	...	...	...	23
10 ,,	8	103	13	124	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...
17 ,,	14	105	25	144	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...
24 ,,	21	113	34	168	...	2	6	...	8	2	10	...	12	1	4	...	5	...	...	...	...	25
31 ,,	10	109	30	149	...	No fleas collected.																
7 September	9	75	19	103	...																	
14 ,,	6	55	19	80	...																	
21 ,,	13	45	30	88	...																	
28 ,,	9	62	30	101	...																	
5 October	6	18	14	38	...																	
12 ,,	11	111	31	153	...																	
19 ,,	11	78	29	118	...																	
2 November	9	55	28	92	...																	
9 ,,	22	97	37	156	...																	
16 ,,	26	70	21	117	...																	
23 ,,	23	66	26	111	...																	
30 ,,	16	80	20	173	..																	
7 December	11	75	30	123	...																	
14 ,,	8	65	15	88	...																	
21 ,,	11	39	8	58	...																	
28 ,,	...	7	1	8	...																	
	821	4,204	985	6,010	...	74	206	...	280	61	[illegible]		243	32	57	...	89	1	5	...	6	618

TABLE II.—Showing the numbers of Rats and Mice examined each month and the seasonal variation in the species of Fleas infesting them. The accompanying graph shows the seasonal prevalence for the period 1909–28.

1928. Month.	Cases in human beings.	Species of Rats.				No. plague infected.	No. of Fleas collected.	*Xenopsylla cheopis.*		*Ctenopsylla musculi.*		*Ceratophyllus fasciatus.*		*Ctenocephalus canis or felis.*	
		R. norvegicus.	*R. rattus.*	*M. musculus.*	Total.			Gross.	Per 1,000 Rats.	Gross.	Per 1,000 Rats.	Gross.	Per 1,000 Rats.	Gross	Per 1,000 Rats.
January	...	59	293	42	394	...	70	40	101·52	24	60·91	6	15·22	...	...
February	...	57	433	62	552	...	71	44	128·62	17	30·79	10	18·11	...	...
March	...	97	452	56	605	...	82	58	95·86	15	24·79	9	14·87	...	...
April	...	100	258	36	394	...	68	37	93·90	16	40·60	14	35·53	1	2,53
May	...	95	475	98	668	...	96	34	50·89	49	73·35	13	19·45	...	...
June	...	82	371	108	561	...	153	49	87·34	76	135·47	24	42·78	4	7·13
July	...	60	329	92	481	...	30	6	12·47	15	31·18	8	16·63	1	2·08
August	...	61	465	106	632	...	48	12	18·95	31	49·05	5	7·91	...	...
September	...	37	237	98	372	...	...	...	...	...	...	...	...	...	...
October	...	57	317	127	501	...	...	...	...	...	...	...	...	...	...
November	...	86	388	106	580	...	...	...	...	...	...	...	...	...	...
December	...	30	186	54	270	...	...	...	...	...	...	...	...	...	...
Total	...	821	4,204	985	6,010	...	618	280	46·58	243	40·43	89	14·80	6	·99

TABLE III.—Showing the number of Rats annually examined from the first appearance of plague at Sydney in 1900 to 31st December, 1928.

Year.	Period of Rat Examination.	Rats examined.				Mice examined.			Infected.							Percentage of infected to total examined.		
		Norvegicus.	Per cent.	*Rattus.*	Per cent.	*Musculus.*	Per cent.	Total examined	*Norvegicus.*	Per cent.	*Rattus.*	Per cent.	*Musculus.*	Per cent.	Total in-fected.	N.	R.	M.
1900 1901 1902	....	......	......	*1900—First plague outbreak, 19th January to 9th August. *1901–2—Second plague outbreak, 12th Nov., 1901, to 8th June, 1902.														
1903	1st May to 15th Aug.	8,695	...	...	...	5,976	...	14,761	Rats. 111	...	...	...	Mice. 50	...	161	...	...	...
1904	1st Mar. to 3rd Dec.	12,169	27·76	8,225	18·76	23,428	53·48	43,822	108	44·26	73	29·92	62	25·41	243	·76	1·16	0·26
1905	Year.	11,383	53·72	5,681	17·81	14,831	46·47	31,895	78	55·32	45	31·91	18	12·77	141	·79	·88	·13
1906	,,	9,275	31·49	8,694	29·52	11,478	38·97	29,447	46	26·44	89	51·15	39	22·41	174	·49	1·02	·34
1907	,,	8,628	27·2	10,749	33·9	12,244	38·7	31,621	57	26·03	143	65·29	19	8·68	219	·66	1·3	·15
1908	,,	7,622	28·39	9,207	34·29	10,020	37·32	26,849	82	46·86	78	44·57	15	8·57	175	1·075	·84	·14
1909	,,	6,752	25·26	11,259	42·08	8,726	32·66	26,737	22	12·36	138	77·53	18	10·11	178	·32	·22	2·06
1910	,,	5,701	24·98	10,076	44·15	7,044	30·87	22,821	4	80·	1	20·	...	...	5	·07	1·00	...
1911	,,	6,025	26·45	10,830	47·55	5,919	26·	22,774	...	...	...	...	...	...	...	...	...	...
1912	,,	6,510	37·82	7,922	46·18	2,722	16·	17,154	...	...	...	...	...	...	...	...	...	...
†1913	,,	5,020	47·29	5,477	51·59	118	1·1	10,615	...	..	...	...	...	...	...	...	...	...
1914	,,	3,732	39·58	5,487	58·14	220	2·33	9,439	...	.	...	..	...	...	...	...	...	...
1915	,,	3,592	37·13	5,946	61·48	135	1·89	9,673		...	...	...	. .	...	...	...	...	...
1916	,,	2,807	35·33	4,967	62·58	167	2·1	7,941	..	...	...	...	...	...	...	...	...	...
1917	,,	3,026	36·76	5,110	62·08	95	1·15	8,231	...	...	..	...	...	...	...	...	...	...
1918	,,	2,601	33·43	5,109	65·67	69	·88	7,779	...	...	...	...	...	...	...	...	...	...
‡1919	,,	849	26·82	2,303	72·76	13	·41	3,165	...	...	...	...	...	...	...	...	...	...
1920	,,	2,707	40·6	3,960	59·4	...	...	6,667	...	...	...	...	...	...	..	...	...	...
1921	,,	5,588	33·59	10,270	61·74	775	4·59	16,633	24	38·71	37	59·67	1	1·61	62	·42	·36	·12
1922	,,	8,433	28·09	12,822	42·68	8,783	29·25	30,038	43	50·6	13	33·73	13	15·67	86§	·50	·23	·14
1923	,,	3,749	19·55	10,147	52·91	5,280	27·53	19,176	...	...	...	...	...	...	...	...	...	...
1924	,,	1,896	11·59	10,954	66·99	3,501	21·41	16,351	...	...	...	..	...	...	...	...	...	...
1925	,,	1,529	12·72	8,059	67·05	2,481	20·23	12,0 9	...	...	...	...	...	...	...	...		...
1926	,,	970	11·14	6,446	74·	1,295	14·86	8,711	...	...	...	...	...		...		...	...
1927	,,	754	10·14	5,849	78·65	834	11·21	7,437	...	...	...	...	...	...		...	...	...
1928	,,	821	13·66	4,204	69·95	985	16·39	6,010	...	...	...	...	...		...	...	...	...
	Total....	122,139	28·20	189,753	43·83	121,113	27·97	433,005	464	36·17	[illegible]	49·37	185	14·45	1,283	·41	·43	·17

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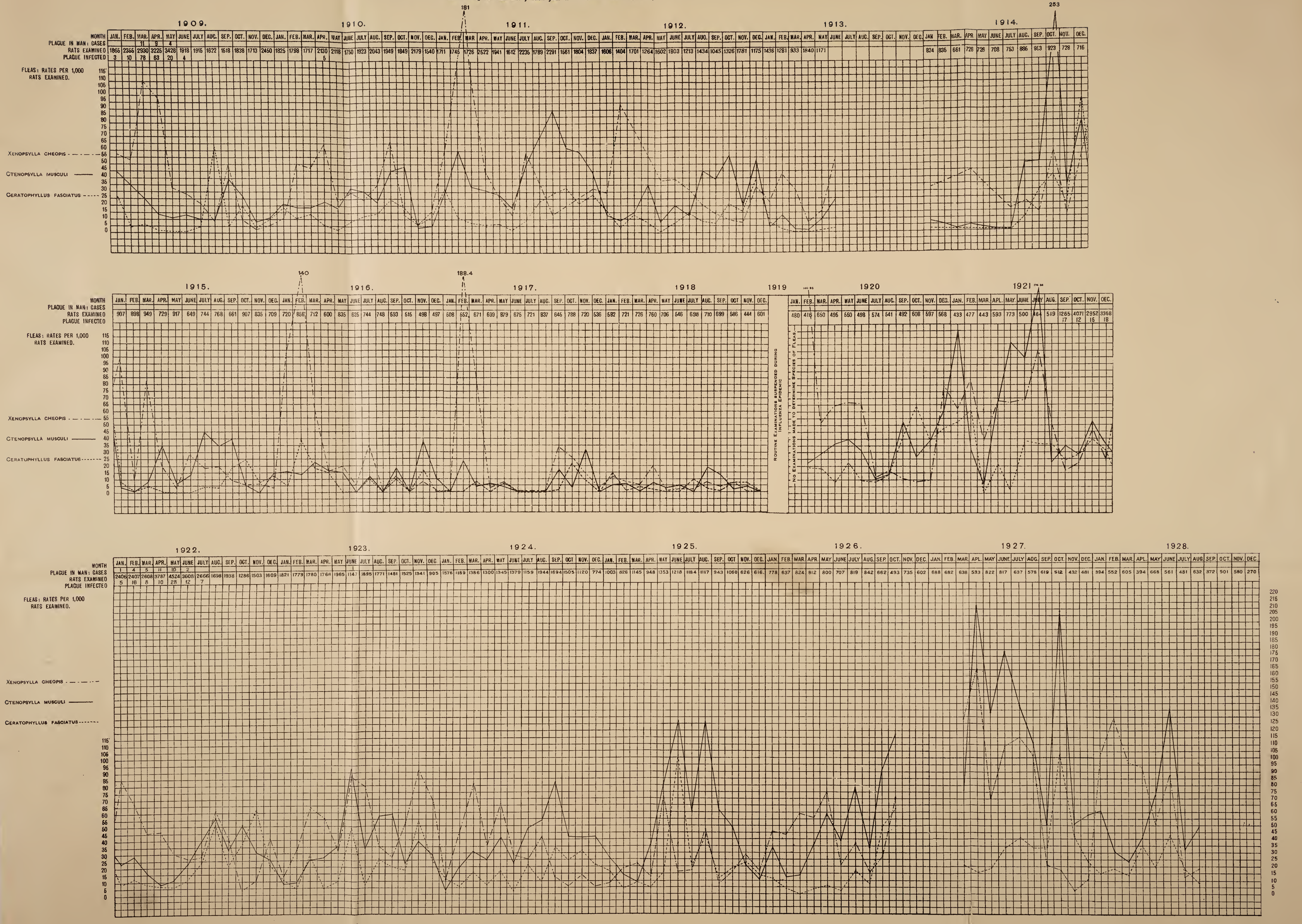
* Destroyed 1900–1902, 215,286. No record was kept during this period of the actual number of rats examined, but they all belonged to one of two species—*R. norvegicus* and *R. rattus*. The infected specimens were [illegible] *norvegicus*. Of the 215,286 rats destroyed between 1900 and 1902, there were about [illegible] number of each species, *R. rattus* predominating [illegible] wharf area; and *R. norvegicus* inland

† Examination of rats was suspended during the [illegible] August, September, and October, owing to an outbreak of smallpox.

‡ Examination of rats was greatly curtailed [illegible] the influenza epidemic.

§ 89 Plague infected animals were fo[illegible] comprising 86 rats and mice, 2 cats, and 1 guinea-pig.

Chart designed to show Seasonal Prevalence of the three principal species of Fleas found on Rats examined in the Microbiological Laboratory each year from 1909 to 1926 inclusive.



1909.

MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
PLAGUE IN MAN: CASES			11	9	4							
RATS EXAMINED	1865	2355	2930	3225	3428	1918	1915	1622	1618	1838	1713	2450
PLAGUE INFECTED	3	10	78	63	20	4						

1910.

MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
PLAGUE IN MAN: CASES												
RATS EXAMINED	1825	1798	1717	2130	2118	1750	1923	2043	1949	1849	2179	1540
PLAGUE INFECTED				5								

1911.

MONTH	JAN.	FEB.	MAR	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
PLAGUE IN MAN: CASES												
RATS EXAMINED	1711	1745	1726	2522	1941	1612	2235	1789	2291	1561	1804	1837
PLAGUE INFECTED												

1912.

MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
PLAGUE IN MAN: CASES												
RATS EXAMINED	1606	1404	1701	1264	1602	1803	1213	1434	1045	1326	1781	1175
PLAGUE INFECTED												

1913.

MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
PLAGUE IN MAN: CASES												
RATS EXAMINED	1436	1281	933	1840	1171							
PLAGUE INFECTED												

1914.

MONTH	JAN	FEB.	MAR.	APR	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
PLAGUE IN MAN: CASES												
RATS EXAMINED	824	835	661	726	726	708	753	886	953	923	728	716
PLAGUE INFECTED												

1915.

MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
PLAGUE IN MAN: CASES												
RATS EXAMINED	907	898	949	729	917	649	744	768	661	907	835	709
PLAGUE INFECTED												

1916.

MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
PLAGUE IN MAN: CASES												
RATS EXAMINED	720	856	712	600	835	625	744	748	593	515	498	497
PLAGUE INFECTED												

1917.

MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
PLAGUE IN MAN: CASES												
RATS EXAMINED	608	552	671	699	879	675	721	837	645	788	720	536
PLAGUE INFECTED												

1918

MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT	NOV.	DEC.
PLAGUE IN MAN: CASES												
RATS EXAMINED	582	721	726	760	706	546	698	710	699	586	444	601
PLAGUE INFECTED												

1919

1920

MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
PLAGUE IN MAN: CASES												
RATS EXAMINED	480	416	650	495	550	498	574	541	492	608	597	568
PLAGUE INFECTED												

1921

MONTH	JAN.	FEB.	MAR.	APL.	MAY.	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
PLAGUE IN MAN: CASES												
RATS EXAMINED	433	477	443	593	773	500	464	519	1265	4071	2952	3368
PLAGUE INFECTED									17	12	15	18

1922.

MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
PLAGUE IN MAN: CASES	1	4	5	11	10	2						
RATS EXAMINED	2406	2407	2608	3787	4524	3608	2666	1698	1938	1286	1503	1609
PLAGUE INFECTED	5	16	8	10	28	12	7					

1923.

MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
PLAGUE IN MAN: CASES						1						
RATS EXAMINED	1821	1779	1780	1766	1965	1147	1895	1771	1481	1525	1341	905
PLAGUE INFECTED												

1924.

MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT	NOV.	DEC.
PLAGUE IN MAN: CASES												
RATS EXAMINED	1576	1189	1386	1300	1345	1379	1159	1944	1694	1505	1120	774
PLAGUE INFECTED												

1925.

MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT	NOV.	DEC.
PLAGUE IN MAN: CASES												
RATS EXAMINED	1003	826	1145	948	1353	1218	1184	1117	943	1060	626	616
PLAGUE INFECTED												

1926.

MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
PLAGUE IN MAN: CASES												
RATS EXAMINED	778	637	824	812	800	707	819	842	662	493	735	602
PLAGUE INFECTED												

1927.

MONTH	JAN.	FEB.	MAR.	APL.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
PLAGUE IN MAN: CASES												
RATS EXAMINED	688	682	638	533	822	817	637	578	619	512	432	481
PLAGUE INFECTED												

1928.

MONTH	JAN.	FEB.	MAR.	APL.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
PLAGUE IN MAN: CASES												
RATS EXAMINED	394	552	605	394	668	561	481	632	372	501	580	270
PLAGUE INFECTED												

* LINES NOT COMPLETED FOR THE SECOND HALF-YEAR, 1913

EXAMINATION OF RATS WAS SUSPENDED FROM JULY TO DECEMBER, 1913, OWING TO THE SMALLPOX OUTBREAK

2. DIPHTHERIA CASES FOLLOWING MODERN METHODS OF IMMUNIZATION.

(E. L. MORGAN).

At the request of the Superintendent of the Royal Alexandra Hospital for Children the hospital was visited for the purpose of ascertaining whether a reasonable explanation could be found of the following facts :—

I. In a group of nurses newly accepted for training the percentage of positive Schick reactors appeared to be unduly high (approximately 80 per cent.).

II. Cases of diphtheria were occurring amongst negative reactors, or amongst nurses who had given a positive reaction which had become negative following on immunization.

1. Schick tests were repeated on nurses who were in the group showing a high percentage of positive readings. Several other persons, whose Schick reaction had previously been ascertained, were included as controls. The test was made on the right arm with a control test on the left arm. In the previous test the arms had been reversed.

The amount of toxin used was $\frac{1}{50}$ of 1 guinea-pig M.L.D.

The results agreed with the previous findings except in the case of one nurse who now gave a negative reaction, having previously reacted positively.

Previous experience in this laboratory has shown that in rural schools outside the precincts of large towns it is not unusual to find over 70 per cent. of positive reactors.

In the present instance it was found that, with one exception, all the nurses had come from the country and this one exception had lived at Eastwood, a suburb of Sydney where living conditions closely approximate to those of the country.

Taking into consideration the facts that the tests were performed satisfactorily and that known negative reacting controls were included with the group the high percentage of positive reactions can be, accounted for by the differences in susceptibility that exist between city and country dwellers.

With regard to the nurse who gave a negative reaction there are several possible explanations.

(*a*) The amount of antitoxin in the circulating blood may vary.

(*b*) Occasionally (in about 1 per cent. of cases) the amount of toxin injected during a Schick test is sufficient to produce immunity.

(*c*) Park, in a large series of cases tested simultaneously on both arms found the reactions on each arm differed. This occurred in 2 per cent. of cases and is possibly the most likely explanation in the present case.

2. On going carefully through the list of cases of diphtheria it was evident that the majority of cases of clinical diphtheria occurred amongst the positive reacting nurses, either before immunization or while the immunization was incomplete. Such a result is to be expected, and can only be avoided by general prophylaxis until immunization is adequate.

Amongst the negative reacting nurses one would expect to find " carriers " and if, as was the case in this instance, the diagnosis of diphtheria rests on a positive throat swabbing then these carriers will be regarded as cases of diphtheria. From the point of view of hospital managment this may be the safest procedure, but it cannot be regarded as evidence of unsatisfactory Schick testing or immunization. Such evidence can only be supplied by cases of clinical diphtheria arising in negative reactors. Dr. Anderson the resident pathologist, supplied the information that definite clinical diphtheria was present in the case of three negative reactors, two of whom had given negative tests when first tested and the third, originally positive, had given a negative test following immunization.

In most series of recorded work on diphtheria prevention such cases exist. Massingham reports an exactly similar series of three cases at London Fever Hospital in the *Lancet* of February 25th, 1928 Slight variations in Schick results do occur as indicated under (*a*) and (*c*) above, and this may possible result in certain susceptible persons being classified as immune.

Diphtheria control measures do not completely eradicate the disease. Park, using a series of 180,000 children, obtained the following figures :—

	No. of cases of clinical diphtheria.
90,000 school children with negative Schick reactions or immunized ...	14
90,000 school children used as controls	56

These figures, which are generally accepted, show that modern methods of immunization reduce the incidence of diphtheria to one-quarter that of untreated groups, but do not prevent the occurrence of all cases.

The material used in carrying out the Schick tests and subsequent immunization was obtained from the Commonwealth Serum Laboratories and, as mentioned above, the amount of toxin used in the Schick test was $\frac{1}{50}$ guinea-pig M.L.D. Park recommends $\frac{1}{40}$ guinea-pig M.L.D. on the grounds that " the larger amount is easier to measure and gives a somewhat more dependable reaction." Alteration of the amount of toxin by increasing the strength from $\frac{1}{50}$ to $\frac{1}{40}$ guinea-pig M.L.D. was considered, but advice was received from the director of the Commonwealth Serum Laboratories stating that a new method of standardization of the Schick test dose of toxin had been adopted, and it is hoped that a more accurate method of standardization may result in more certain protection of those exposed to infection.

3.—"X" DISEASE: ENQUIRY re SEQUELÆ FOLLOWING AUSTRALIAN EPIDEMICS OF 1917–1918. (28/21947).

(E. L. MORGAN.)

In view of the known occurrence of post-encephalitic sequelæ such as Parkinsonianism, Professor J. B. Cleland, of Adelaide University, requested that inquiries be made as to whether any of those persons who suffered from "X-disease" during 1917–1918 and recovered exhibited any after effects.

A letter asking for information was forwarded to the Government Medical Officers in towns where cases had occurred.

The replies indicated a confusion between "X-disease," Encephalitis Lethargica, and Infantile Paralysis, and except in one or two instances it is doubtful if the information supplied referred to individuals who had recovered from "X-disease."

It would appear from the replies that the medical men who had been circularised knew of no undoubted case which exhibited after-effects, though this would not necessarily mean that all who suffered from the disease have remained well ever since. In the event of there being such cases it is difficult to see how authentic information concerning them could be obtained, especially when the confusion above-mentioned exists.

The replies were forwarded to Professor Cleland for further study.

4.—SYDNEY MILK SUPPLY: (1) EXAMINATION OF SUBURBAN MILK FOR (*a*) TUBERCLE BACILLI; (*b*) BACTERIAL CONTENT.

(E. L. MORGAN.)

(*a*) The systematic examination for tubercle bacilli in milk from dairies which supply the metropolitan area of Sydney has been continued, and 142 samples were collected and examined from 97 dairies (2,466 milking cows) between 15th May and 31st December, 1928. No tubercle bacilli were found either by the microscopical examination of centrifuged sediment or by guinea-pig inoculation.

Towards the latter end of the year one of the guinea-pigs inoculated with a sample of milk from dairy C1/S developed a lesion of the spleen which in some respects resembled tuberculosis. The possibility of this lesion being due to *Brucella abortus* is under investigation.

(*b*) *Bacterial Content.*—In 83 samples the bacterial counts were under 100,000 colonies per cc., and in 42 the counts ranged between 100,000 and 600,000 per cc. In the seventeen samples which gave an unduly high count the procedure followed in connection with the dairies was similar to that described in the report for 1927.

[14 graphs, 4 photos, 2 diagrams.]

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